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KOMPAK water heaters were designed and perfected in peace times, on account of their wonderful hot water service and freedom from complaint.

THE fact that the Kompak also saves copper tubing, thus meeting the demands of the government for conservation of this highly important material, seems almost providential.

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The Gas Machinery Company

Cleveland, Ohio

COAL GAS PLANTS **WATER GAS PLANTS**

BY-PRODUCT MACHINERY

NOTE:—

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The best system of coal carbonization
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Figures prove this and the guarantees of

THE UNITED GAS IMPROVEMENT CO., Philadelphia

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AUG 19 1918

Uses of Gas in Manufacture of Rubber in Its Various Forms

Getting Rid of Impurities in Raw Product—Vulcanizing—Making Elastic Strips for Garters, Etc.—Automobile Tires—Mixed Rubber—Determination of Color

By GILBERT C. SHADWELL

India rubber (or more commonly, just rubber) was originally used in the United States and England for the rubbing out of pencil marks and for no other purpose. In fact, a standard reference works states that artists paid 72 cents for a cubic half-inch as recently as the end of the eighteenth century. Up to that time it was called elastic gum or gum elastic. The scientific name, however, is caoutchouc.

It appears that it was not until about the year 1820 that its employment extended beyond its erasive properties, but that its application to the manufacture of waterproof cloth first gave it commercial importance. Since that time it has become one of the most important raw materials known, and due to the rapid developments which have come about in the last few decades gas now plays a most important part in supplying the heat necessary to produce a vast number of rubber derivatives in their commercial forms. Fig. 1, for instance, shows several appliances installed at a factory making artificial (rubber) hands, feet and other members. Attention is particularly drawn to the appliance on the extreme right with clamped lid, which is a vulcanizer for the manufacture of these articles. It is self-contained and gas-heated. Before going into further details of appliances of this kind, however, some further data regarding the subject of rubber and its properties before and after vulcanizing may be of interest.

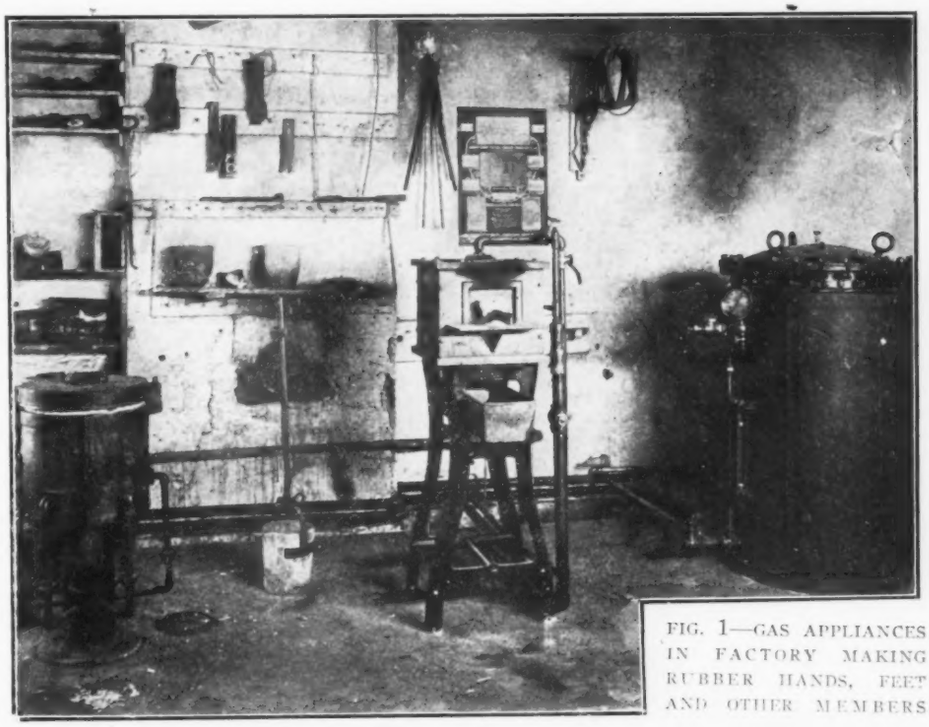


FIG. 1—GAS APPLIANCES IN FACTORY MAKING RUBBER HANDS, FEET AND OTHER MEMBERS

Action Under Various Temperatures

Commercial rubber is a tough, fibrous substance possessing elastic properties in the highest degree. Reduced to the temperature of freezing water (32 deg. Fahr.) it hardens, and in greater part, if not entirely,

FIG. 2.—SOFT METAL FURNACES USEFUL IN VULCANIZING

loses its elasticity, but does not become brittle. When heated (as by placing in boiling water) it softens and becomes very much more elastic than at ordinary temperatures, though it does not in any degree dissolve in the water.

If suddenly stretched to seven or eight times its original length it becomes appreciably warm, and if kept in this outstretched form for several weeks it appears to lose its elastic properties to some extent, and in this condition is readily cut into strips or threads, which form the commercial "elastic" commonly met with in garters, etc., although, to-day, the majority of those elastic goods met with are made from rubber in its vulcanized form.

The purification of raw rubber is carried out by boiling it for some time in large tanks, which softens it and in some measure releases the solid impurities with which it is often mixed. This boiling operation is generally carried out by means of steam, but there would seem to be no real reason why gas should not be used under favorable circumstances.

Obtaining Rubber Threads

After boiling it is put through a type of rolling mill which converts it from irregular lumps to a sort of shredded and masticated layer. While being rolled in this manner it has running water poured upon it so as to cleanse it thoroughly from all impurities. After this treatment it passes through other rollers, which are grooved and constitute the washing machines. From these it issues as long and moderately thin sheets, which are crinkled in form. These are then hung up in a drying room, which is often heated by steam, but a gas-fired equipment may readily be used where the conditions are suitable. Sometimes, however, this form of drying is omitted, and the product is placed in a kind of kneading machine having heavy rollers, which causes all parts of the rubber to adhere perfectly so as to drive out all superfluous water. When this is adopted it finally causes all holes and interstices to disappear and a solid dry block of fairly pure rubber is the result. The block of rubber thus formed is then generally cut (under water) by powerful knives, from which threads of rubber are obtained. The general employment of rubber in this semi-raw form is quite limited nowadays, but in vulcanized form it has many hundreds of uses. The discovery of the process of vulcanizing was made in the early "thirties" both in England and in the United States. It consists of treating the purified rubber with sulphur at a temperature of from 240 to 310 deg. Fahr. more or less, depending on circumstances. There are two general forms of vulcanized rubber: (a) That which is hard and horn-like, and (b) that which is relatively soft and elastic; and in carrying out the process it is cut or torn into shreds and sometimes crushed. When the hard rubber is to be formed, such as pipe stems, fountain pens, etc., the rubber is mixed with about one-third its weight of sulphur and heated for several hours until the temperature finally reaches 300 deg. Fahr. or more. On the other hand, when soft vulcanized rubber is needed, such as that used for tires, "elastic" gloves, erasers, etc., a very much smaller proportion of sulphur is required, which is about 2 to 10 per cent, and the heat required in the vulcanizer is considerably less, although sulphur is the only essential required to vulcanize rubber. Yet other substances, such as litharge, red lead, magnesia, etc., are sometimes added, and the color of the rubber is consequently changed.

Impervious to Gases

As was stated previously natural rubber is elastic, cohesive, impervious to gases, etc., but that it becomes hard when cold and soft when hot, and also it is attacked by certain oils, etc. Vulcanized rubber is not so affected—or at least scarcely at all, if the vulcanizing is carried out correctly to the required degree. It is, in fact, greatly improved in very many respects.

This fact is witnessed by the vast number of manufactured vulcanized rubber goods produced to-day, such as coats, shoes, belting, buffers, tires, gloves, squeegees, stoppers, gaskets, bulbs, bags, hose, tubing, washers, valves, pipes, fire hose, bands and a quantity of surgical goods.

A Valuable Cement Obtained

Then hard rubber goods are quite familiar, such as "Vulcanite" pipe stems, fountain pen holders, combs, chains, bracelets, boxes, paper knives, handles, buttons, electrical insulating parts, etc.

A valuable cement is also made from rubber when melted at about 400 deg. Fahr. with half its weight of slaked lime.

It is interesting to compare the rubber as first obtained with the finished product before considering in greater detail the processes involved in its commercial

treatment as then the reactions involved are far better understood. The chemistry of rubber is but a half-opened book, and the writer has never found more than a tithe of the information on the subject that is usually available on other products of a similar commercial usefulness. Recapitulating then, rubber is the chief constituent of the milky juice or "latex" furnished by certain trees, shrubs and vines growing in the tropics, of which the cultivated varieties form the most efficient so far as the caoutchouc forms are concerned. One thing is important, and that is that this latex must not be confused with what is usually called the sap of trees. It has apparently nothing to do with the actual growth (although it may effect it indirectly). Latex exists between the bark and the wood; also in the leaves and the roots. It is like milk in appearance and in formation, for it is an emulsion and consists of a number of globules suspended in a watery fluid, and these latices or globules can actually be separated like cream from milk by means of a centrifuge. Also, like milk, heat or acids (and alkalies) will separate the latex into a coagulated mass and the rubber or caoutchouc separate out into solid flakes or curds.

If for the moment we forget the purely commercial aspect and examine these curds it will be found that they are chemically almost the same as oil of turpentine, which has the chemical formula C_5H_8, except that rubber appears to be a multiple of this form to each molecule, or in general terms $(C_5H_8)n$; n, apparently being equal to 10 or 20, according to a standard authority—"The Chemistry of India Rubber," by C. O. Weber (London, 1902)—and if a really thorough idea of this most fascinating subject is to be thoroughly appreciated and understood, readers should refer to this or one of the other works which are readily obtainable on this matter.

Moderate Temperature Changes Do Not Affect Vulcanized Product

After vulcanization, rubber is no longer softened by a moderate heat, a temperature of 160 deg. C. scarcely affecting it, nor is it rendered rigid by cold, and the ordinary solvents fail to dissolve it.

If rubber is immersed in melted sulphur for a short while it will absorb about 10 per cent of its weight at about 120 deg. C., but although it becomes yellow it is not yet vulcanized and does not become so until it has been heated to about 140 deg. C. for a definite period of time. When this has been done a definite chemical combination between the rubber and the sulphur takes place. Most of the rubber now manufactured is not combined with sulphur when in the form of sheets, but is mechanically incorporated with about one-tenth of its weight of that substance by means of mixing rollers (any required amount of pigment, etc., as explained previously, being added). The mixed rubber thus obtained is readily softened by heat and can be very easily worked into any desired form or rolled into sheets by means of a calendering machine. Vulcanization is then ensured by exposure for half an hour or so to a temperature of about 145 deg. C. by means of closed vessels, such as in Fig. 1, when high-pressure steam has been formed or admitted.

When tires having smooth treads are formed they are wrapped with linen (usually by machinery), the interior being filled by a heavy inner tube and the edges being pressed in a "former." The whole is then placed in the vulcanizer and water poured into the bottom. The heat is applied and steam is produced at such a pressure as to give a temperature of some 300 deg. Fahr. Time and pressure of application as well as temperature are factors of practical vulcanization, and almost any degree of hardness and durability are secured if care be taken.

If an excess of sulphur is added vulcanite or hard black rubber is formed. A medium mixture is used for artificial hands and feet such as are produced in the vulcanizer shown in Fig. 1.

Vulcanization of Insulated Cables

Vulcanization of insulated cables, etc., is carried out often by direct heat or sometimes by dropping in a lead bath (usually with a ladle from a soft metal furnace such as that shown in Fig. 2).

The matter of jointing cables is taken care of by first bracing the metallic ends and then jointing them, each strand being taken care of separately. Afterwards the joint is covered with rubber tape, which has been impregnated with sulphur as outlined above. It is then bound tightly with linen, cotton or other suitable tape to prevent undue expansion and heated. The heat may be properly applied with a brazing burner having a "soft" flame passed back and forth so as not to burn the tape. If the work be properly carried out, a good vulcanized joint will be the result.

Patching the Inner Tube

In a similar way a patch on an inner tube of an automobile tire may be suitably carried out, provided the tube be properly clamped and bound with tape or other suitable material. Often a 'former" is used, but this is not always a necessity.

An automobile tire or any other article may be vulcanized in an appliance such as that shown in Fig. 1 if proper methods are adopted.

If a tire is to be treated, it must be placed in a former to give it the required treads, etc., and then bound in linen tape tightly after a stout inner tube filled with air and a rim former has been placed and clamped at the base. After it has been placed in the machine and the top clamper on the gas is lighted, the steam turned on made from the water at the base, and the pressure and temperature watched for an hour or two until the conversion is complete.

Appliances for taking care of partial repairs are similar in principle, but are of concave sectional form, the heat being supplied from the interiors. Although steam is often the direct form of heat, in such cases gas is often used to produce the steam, and garages will welcome this accessory, as they will also for their brazing burners, which may also be employed for a similar purpose if care be used.

The subject of the heat applications in rubber formations is a wide one, and whether used for auto tires, repairs, the manufacture of rubber articles or for any other purposes, it deserves every attention the gas man can devote to it.

The Electro-Bleaching Gas Company called a special meeting of the stockholders Aug 15 to vote on increasing the capital from $500,000 to $1,000,000.

Phenomenon of Breathing Important in Gas Industry Especially Because Breathing Involves Process Whose Net Results are Exactly Those of Consumption by Oxidation by Any Fuel

Diffusion of Gases in Organisms and Mechanism of Breathing—Must Seek Elsewhere Than in Gaseous Impurities for Causes of Discomfort in Crowded Rooms—Acidic Properties of CO_2 in Blood that Regulate Breathing

By ENOCH KARRER
Formerly of Physical Laboratory, United Gas Improvement Company

Breathing is the process whereby oxygen is conveyed into the organism and carbon dioxide is removed from the body.

The phenomenon of breathing is important to the gas industry not only in that the use of gas must comply with conditions of good breathing, but also in the fact that breathing involves a process whose net results are exactly those of the consumption by oxidation by any fuel.

In order to use gas intelligently and to derive from its use the greatest benefits and conveniences, any information regarding the interaction between the organism and the constituents of the gas itself or the products of the combustion of the gas is of vital importance.

An Opportunity for Improvement of Gas-Consuming Appliances

Between the acts of inspiration and expiration there is a process of oxidation of some kind. Fully to understand this manner of oxidation would be to add much light on the subject of oxidation, and possibly suggest new improvements in the mechanism of the appliances in which gas is consumed. To this end, however, all possible data must be gathered regarding the mechanism of breathing and more specifically regarding the diffusion of the gases through the membranes of the cells and tubes. It will be noticed later how important some of these processes may be.

Much research has lately been done by American and European workers* upon the subject of breathing. Some of the results are contrary and revolutionary to commonly accepted notions.

In a general way the phenomena of breathing are as follows: The oxygen of the air inspired is taken up by the blood in the lungs; it is carried to all parts of the body by the blood circulation, and is given up to the tissues with which the blood comes into contact. While giving up oxygen to the cells of the tissues, the blood takes carbon dioxide from them and carries this gas to the lungs, where it is given off into the atmosphere in the air expired.

The oxidation occurs chiefly in the tissues of the body, and within wide limits is independent of the amount of oxygen in the air or the amount of oxygen in the blood. The rate of oxidation is likewise independent in a large measure of the amount of food taken into the body, the amount of oxygen per unit weight of body remaining constant even after long starvation.

The oxygen in the blood is held in weak chemical combination by the haemoglobin of the red corpuscles, which is scarlet when saturated with oxygen and dark purple when unsaturated.

This oxy-haemoglobin compound is easily dissociated when the concentration of free oxygen in equilibrium with it is decreased.

In marked contrast to the insensitiveness to changes in oxygen is the great sensitiveness of the breathing to the changes in the amount of carbon dioxide in the air of the lungs.

Carbon Dioxide Chief Factor in Regulation of Breathing

It is carbon dioxide which is the chief factor in the regulation of breathing. The breathing is such that the carbon dioxide in the air in contact with the air sacs (alveoli) in the lungs is kept at a constant average pressure of 39.9 mm. (5.6 per cent). When the percentage of carbon dioxide is increased to 5.8, the amount of air breathed must be increased 100 per cent, while if the CO_2 falls to 5.4 per cent breathing ceases.

When the carbon dioxide in the air breathed is equal to that in the alveolar air, extreme panting results, and with more carbon dioxide unconsciousness results, with a decrease in breathing.

One may become aware of these effects by forcefully expiring, when, due to the increased aeration of the lungs, the carbon dioxide falls in amount, one experiences a "dizziness," and if prolonged a headache.

During muscular exertions, carbon dioxide accumulates, and breathing is increased to offset this.

The presence of CO_2 in the blood is as essential to life as is oxygen. Very marked dimunition of it will produce "shock" and death.

Must Seek Elsewhere Than in Gaseous Impurities for Causes of Discomfort in Crowded Rooms

The sensitiveness of the breathing mechanism to changes in CO_2 in the blood and lung cells raises the question of the effect of CO_2 in the air of rooms and confined spaces. We may quote Haldane in this connection, page 18: "The natural ventilation of an ordinary room is, however, so considerable that it is very seldom that the percentage of CO_2 in the air exceeds 0.5 per cent. What effects will the gaseous impurity in such

* F. N. Haldane, Organism and Environment Breathing (1917).

air have? Clearly none that are appreciable. The breathing will be very slightly deeper, so as to keep the alveolar CO_2 percentage constant; but the increase in breathing will be less than a tenth, and such an increase is totally unappreciable subjectively. The slightly increased breathing will also keep the oxygen percentage in the alveolar air from falling, so that the diminished oxygen percentage in the air will be of no account. We must thus seek elsewhere than in the gaseous impurities of the air of rooms for the causes of the discomfort felt in crowded rooms."

It is the acidic properties of the CO_2 in the blood which regulate breathing. The presence of CO_2 in the lungs may be decreased by dilute acids (organic or inorganic) in the blood. The breathing is far more sensitive as an indicator of changes in the acidity of the blood than any sensitive electro-metric method.

The breathing, though regulated to greatest extent by CO_2 under normal conditions, does respond to wide variations in the presence of oxygen. But air with oxygen as low as 15 per cent does not appreciably affect breathing. Normally the pressure of oxygen in the alveoli is 100 mm. of mercury, and this may be reduced to 60 mm. with impunity.

Such effects are seen in balloon flights and in mines. On the other hand, where the pressure of the atmosphere is increased, as in case of deep sea diving, the diver may become unconscious from CO_2 poisoning while having plenty of oxygen.

Effects of Want of Oxygen Excellently Seen in Carbon Monoxide Poisoning

The effects of want of oxygen are very excellently seen in carbon monoxide poisoning. Carbon monoxide has an affinity for haemoglobin 300 times greater than oxygen. Therefore, when sufficient CO is present the blood cannot take up oxygen, and all effects of dearth of oxygen supply ensue. CO has no other direct poisoning action than this. This is demonstrated by the fact that an animal may live in an atmosphere containing 80 per cent of CO if such artificial conditions are brought about that will enable it to be independent of the red corpuscles as carriers of oxygen to the cells. This may be accomplished by placing the animal in oxygen under pressure so that the fluids of the blood will dissolve sufficient oxygen for the need of the cells.

The body can, as has been observed by mountaineers and balloonists, acclimatize itself to want of oxygen. This is accomplished (1) by the increased breathing to offset the fall in pressure of alveolar oxygen; (2) by increased absorption of oxygen in the lungs to offset the fall in pressure of oxygen in the blood; (3) by increased production of haemoglobin to offset the fall of oxygen pressure in the capillaries and cells.

At this point we are led to a consideration of how oxygen passes into the blood through the thin epithelial membranes of the lungs. The important aspects of this process are: First, does the oxygen diffuse through organic membranes in accordance with the ordinary diffusion laws? Second, is there any selectivity shown in that oxygen may diffuse more readily than nitrogen? These facts have a direct bearing upon any appliance consuming gaseous or other fuels.

Oxygen Diffuses According to Known Laws

It seems that under normal conditions oxygen diffuses according to known laws of diffusion. Regarding any selectivity, however, no definite data appear to be on record. Yet CO reacts with haemoglobin, and its passage through the membranes seems to be like that of other neutral gases, nitrogen and hydrogen.

The diffusion of oxygen does not always follow these simple laws, for under conditions of want of oxygen the pressure of it in the blood leaving the lungs may actually be higher than the pressure of it in the alveolar sacs. Thus the flat epithelial cells of the membranes of the lungs may play an active part in the diffusion of oxygen. This happens howsoever the want of oxygen is brought about; as by breathing just sufficient CO, or by severe muscular exercise or after acclimatization at high altitudes.

There are other instances in the organic world where oxygen is secreted. It was shown long ago that the gas in the swim bladder of deep sea fish is chiefly oxygen. The pressure of oxygen in the surface sea water is about one-fifth atmosphere, and the pressure of oxygen in the blood of the fish is very considerably less than this. Yet the pressure of the oxygen in the swim bladder in deep sea fish may be 100 atmospheres or more. The columnar cells of the swim bladder are behaving almost like the Maxwell demon, that alone could circumvent the second principle of thermo-dynamics. Until more definite knowledge is obtained regarding the mechanism we must assume, however, that the columnar cells or some other cells in conjunction with them are doing work in secreting this oxygen, and derive their energy (probably chemical) from the energy in the food. So that were one to accomplish such selective transmission of oxygen, it would be necessary also to duplicate certain other processes of living matter.

Possible Application to Gas Burner and Lamp

The importance of these phenomena lies in their possible application to the gas burner and gas lamp. If such a membrane could be found which would selectively transmit the oxygen of the atmosphere to a flame, the huge loss of energy due to the nitrogen in the air would be eliminated. Higher flame temperature would result, and as a consequence of this also higher efficiency in all burners and gas lamps.

Indications of selectivity in this regard have been found in the non-living world. Wherever the substance transmitted reacts with the transmitting medium we may expect some selectivity. A substance to fulfill the requirements for our case needs to take up oxygen readily from the atmosphere and pass it on to the flame readily. Certain of the rare earths are excellent carriers of oxygen in chemical reactions, and their behavior is immediately thought of in this connection. Quartz in very thin sheets transmits oxygen more readily than nitrogen, but the difference has not been shown to be very great.

Data Filed Showing Artificial Gas Production and Consumption

The Public Service Commission of Indiana has just completed data showing total artificial gas production in Indiana through a period of years and total consumption of fuel entering into such gas production. The figures have been sent to Washington for use by officials in connection with war work, and it is supposed the items of coal and oil consumption will most interest

Government officials. The figures show that for the fiscal years ending June 30 of 1914 to 1917, inclusive, all the gas companies of Indiana produced 21,023,741,165 cu. ft. of gas, and of this amount a total of 19,115,435,393 cu. ft. was sold to customers of the various gas companies.

Of the total amount produced 14,359,991,232 cu. ft. was coal gas and 6,663,749,933 was water gas. In addition to these totals the commission shows others, for the calendar year of 1917, ending Dec. 31, as follows: Total gas produced, 6,689,851,263 cu. ft.; coal gas, 4,151,405,793; water gas, 2,538,445,470 cu. ft. The total amount of gas sold during the calendar year of 1917 was 6,406,254,813.

The total gas production in the fiscal year of 1914 follows: 4,602,193,153, made up as follows: coal gas, 3,748,785,081; water gas, 1,863,408,072. Gas sold during that year totaled 4,136,740,053 cu. ft.

The total gas production for the fiscal year of 1915 follows: 5,122,932,300 cu. ft., made up as follows: coal gas, 3,629,060,786; water gas, 1,493,871,522. Total gas sold during that year was 4,587,700,067 cu. ft.

The total gas production for the fiscal year of 1916 follows: 5,462,448,410, made up as follows: coal gas, 3,936,272,249; water gas, 1,526,176,161. Total gas sold during that year was 5,017,527,326 cu. ft.

The total gas production for the fiscal year of 1917 follows: 5,836,167,294 cu. ft., made up as follows: coal gas, 4,045,873,116 cu. ft.; water gas, 1,790,294,178 cu. ft. Total gas sold that year was 5,373,467,947 cu. ft.

The oil used by Indiana gas companies during the period totaled 6,761,120 gal. in the fiscal year of 1914; 5,292,667 gal. in the fiscal year 1915; 5,406,498 gal. in the fiscal year 1916; 5,427,807 gal. in the fiscal year 1917, or a total of 19,115,435,393 gal. in the period over which the figures run. The total oil consumed by the companies in the calendar year of 1917 was 8,155,999 gal.

The report also shows that 453,977 tons of bituminous coal was carbonized by the companies in the fiscal year of 1914: 586,156 tons in 1915; 662,491 tons in 1916; 683,448 tons in 1917, or a total of 2,386,072 tons for the entire period. During the calendar year of 1917 a total of 783,538 tons were consumed.

No anthracite coal was consumed by the companies.

How the Gas Companies Are Helping the Nation

Missouri Gas Men in Twelfth Engineers Decorated for Bravery

The Twelfth Engineers, in the ranks of which are a number of gas men from St. Louis and other Missouri points, were decorated by the British on July 4 for their bravery and assistance in the battle of Cambrai early last spring, according to a letter received by Jacob D. von Mour, superintendent of the distribution department of the Laclede Gas Light Company, of St. Louis, from Lieut.-Col. John A. Laird, of the engineers, dated July 6. The letter said in part:

"Major General Kerr, of the British Army, presented the decoration to our men yesterday. A very impressive ceremony, but he refused to kiss Skelly (Capt. James W. Skelly, of St. Louis). There was a movie man on the job, so look out for the picture. I am trying to get a copy of the film to send to the club (the Engineers' Club of St. Louis). The club was represented by the beautiful colors you presented to us so eloquently and gracefully.

"After luncheon yesterday we went to Le Treport and wiped up the earth with the Philadelphia Hospital Unit in a game of baseball. Our boys are pretty much the champions. The score was 15 to 3."

Under an earlier date, Colonel Laird wrote: "I think I can tell you the Twelfth went through hell the last ten days in March, and spent Easter Sunday digging trenches. Three officers and seven enlisted men were decorated."

D. C. Seewir, advertising manager of the Laclede Gas Light Company, of St. Louis, Mo., who has been loaned to the advertising section of the Federal Food Administration by the company, has in three weeks induced 125 hotels and restaurants in St. Louis to put up artistic signs carrying the Administration's new slogan, "Save Food; 120,000,000 Allies Must Eat."

Patrick Fitzgerald, assistant superintendent of the Northern States Power Company, and Joe Columbo, also of the Northern States Power Company, Stillwater, Minn., division, have joined the Army, making a total of twelve stars in the Stillwater service flag.

J. G. Fisher, distribution superintendent of the Drumright, Okla., division of the Oklahoma Gas & Electric Company, has been called into military service.

Eugene R. McCarthy, former construction superintendent of the Malden Gas Company, Malden, Mass., has received a commission as second lieutenant in the Quartermaster's Corps with orders to report immediately to Camp Johnston, Jacksonville, Fla.

Fred A. Spitznagle, who was head bookkeeper in the office of the Springfield (Ill.) Gas & Electric Company when he enlisted in the Army, has been commissioned a second lieutenant in the air service of the National Army.

Lieutenant Fulton Mandeville, formerly of the commercial department of the Louisville Gas & Electric Company, Louisville, Ky., has been promoted to the rank of captain in the 327th Machine Gun Battalion of the Lincoln Division. Captain Mandeville graduated from the Officers' Training Camp at Fort Benjamin Harrison last year and received a commission as first lieutenant.

N. I. Garrison, manager of the El Reno, Okla., division of the Oklahoma Gas & Electric Company, has been elected vice-chairman of the Canadian County Chapter of the Red Cross.

Richard Biggs, employed by the Lynn (Mass.) Gas & Electric Company, who received an honorable discharge from the Army, being attached to Company D of the old 8th Regiment, is planning to make another attempt to enlist in the Marines, feeling that he is now in fine physical condition.

Toronto Company Gets More Consistent Load and Cuts Down Wastage By Strong Campaign for House Heating Business

More Consumers of Gas on Books than City Has Water Consumers —Feeling on Consumers' Part that Company is Selling Appliances to Please Them and Not Itself Carefully Engendered

By G. W. ALLEN

The Consumers Gas Company, of Toronto, was in business for sixty years before it came to the conclusion that there might be something in the statement that a new business department for the education of its consumers in the proper use of gas and teaching them how to use gas more efficiently so as to get the greatest good of it would be a paying venture. It is now just a little more than nine years since it started its new business department, more as an experiment than anything else; starting it also at a time when the newspapers and other publications were full of the news of the hydro-electric development work going on at Niagara Falls and other parts of the country, and advising the people to seriously consider electricity for lighting, *heating*, cooking and power purposes; but notwithstanding this competition, the company, through means of a well thought out plan, started to grow by leaps and bounds.

At the time the company started this new business department it had 55,000 consumers of gas. In nine years, notwithstanding the extreme competition from the electrical men, and with power, lighting and cooking rates hovering around the disappearing point, and which, I understand, are the lowest electrical power rates in the world, the company's customers have increased to such an extent that now there are 110,000 on the books, more consumers of gas than the city has water consumers, and the output of gas itself has increased from an average output of 5,000,000 cu. ft. of gas daily to nearly 14,000,000 cu. ft. of gas daily, and on some days during the past winter, owing to the shortage of coal, the company helped out the situation by supplying additional gas for the purpose, reaching an output of 17,000,000 cu. ft. of gas per day.

An Economical Solution of Fuel Problems

Hundreds and thousands of industries in the city of Toronto are using gas for many purposes, and the campaign of education has proven that the use of gas is an economical solution of our fuel problems.

I could perhaps state numerous instances where gas companies have made remarkable strides towards success as an institution since their establishment of new business departments, manned by competent help. A gas plant in proper hands and kept in an up-to-date condition becomes an asset that no city or town would ever think of doing without. Many a good manager, however, is handicapped by a run-down state of the gas plant through no fault of his, but from a lack of funds which might put the plant and system into an up-to-date condition.

There are, on the other hand, some managers who, even with a good plant, could not get or create a market for gas, even if they tried, and some couldn't sell it if the gas could be obtained for nothing. But, again, there are many gas men who can take a fairly high-priced gas and, in the face of real stiff competition and a prejudiced community, sell all they can make of it, and make money out of it, too. So, I say, that unless all gas company managers wake up to the fact that they can help solve this great economic coal problem, we will fall far short of the goal which, together, co-operatingly, we can reach.

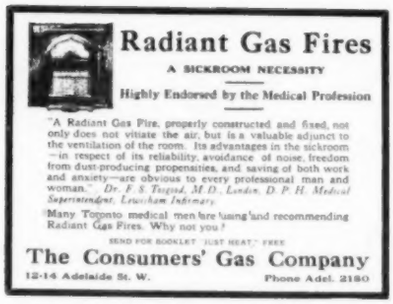
"JUST HEAT" PROVED ATTRACTIVE CATCH PHRASE IN COMPANY'S PUBLICITY

Will Continue Pushing Sale of Gas

The Consumers Gas Company, of Toronto, is about the seventh or eighth largest artificial gas manufacturing company on the American continent. It has an output of manufactured gas greater than almost most of the forty-five or so artificial gas companies in Canada combined.

Although the company has had its troubles, due to the unprecedented coal situation, nevertheless it has been able to take care of all the demands made upon it for gas, and the company will continue to do what it can in the future to help in the solving of the problem of coal shortage by encouraging the people to use gas for household heating and domestic purposes, keeping in mind, however, the necessity of creating an output for gas where it will be in the best interest of the country, and where it will be used efficiently, and it will continue to encourage customers to use gas where it is the most efficient fuel to use for the purposes intended.

There are almost 20,000 homes in the city of Toronto where the occupants use gas for cooking purposes exclusively, winter and summer, be-


Radiant Gas Fires
A SICKROOM NECESSITY
Highly Endorsed by the Medical Profession
"A Radiant Gas Fire, properly constructed and fixed, not only does not vitiate the air, but is a valuable adjunct to the ventilation of the room. Its advantages in the sickroom —in respect of its reliability, avoidance of noise, freedom from dust-producing propensities, and saving of both work and anxiety—are obvious to every professional man and woman." Dr. F. S. Toogood, M.D., London, D.P.H. Medical Superintendent, Lewisham Infirmary.
Many Toronto medical men are using and recommending Radiant Gas Fires. Why not you?
SEND FOR BOOKLET "JUST HEAT," FREE
The Consumers' Gas Company
12-14 Adelaide St. W. Phone Adel. 2180

A PARTICULARLY STRONG EFFORT WAS MADE TO OVERCOME PREJUDICES OF PHYSICIANS TOWARDS GAS FIRES IN GENERAL

sides many thousands who use it for lighting and auxiliary purposes, and any curtailment of the gas company's coal supply would therefore be a serious matter to the people of Toronto. About 50,000 gas ranges and 20,000 gas water heaters are in use all told in the city.

The gas company, in order to make its gas supply go as far as possible, recently inaugurated a campaign for the elimination of the waste of gas on the part of its consumers. The following advertisement is one which was published, and speaks for itself:

Use All The Gas You Need, But Don't Waste It

THE shortage of coal has created such an unprecedented demand for GAS that in order to supply the vast quantity it is vitally necessary that all gas consumers be requested to do all in their power **not to waste it.**

It is taken for granted that most of our customers do try to be economical in the use of the gas, but we feel sure there are many little ways in which a still further saving can be brought about if a little attention is given to the subject. This Company is ready and willing to supply all the legitimate demands made upon it for a gas supply if the people are careful in the use of it.

Saving The Gas

Will Materially Reduce Your Own Gas Bill.
Will Aid in Solving the Fuel Question.
Will Conserve the Supply for Others in Need of It.
Will Guarantee a Continuous Supply in the Future.
Will Allow Others to Use Gas Who Cannot Get Coal.

Some Ways In Which You Can Save Gas

DON'T use open or flat flame burners—Use mantle burners for lighting purposes. Buy only good gas mantles and do not use broken ones. Have the burners on your gas range and other appliances adjusted properly and **see that they are kept clean.** Turn out all gas lights that are not actually needed. Don't allow the gas flames to flare up around the outside of a vessel or pot when using the burners of your gas range, turn the flame down to the proper height and save money. Don't let your water heater burn any longer than is necessary to heat the water required. Don't hesitate to call on the Company whenever you need advice as to the use of your lighting, heating, cooking or other gas appliances. GAS LIGHTS REGULATED FREE OF CHARGE.

Again, We Say, "Use All the Gas You Need, But Don't Waste It."

The company has also endeavored to sell only such appliances that will give the greatest service on a minimum gas consumption, or, in other words, appliances giving the greatest efficiency.

Eliminating Wasteful Heating Devices

For auxiliary house-heating purposes, the company, I believe, very wisely eliminated from its sales floor the old-time and out-of-date and inefficient gas log and asbestos fires, and substituted therefor the new types of fires, such as the radiant gas fires and reflector heaters. The company believes that fires which cause consumers to complain by reason of the odorous character of same should not be sold, *believing them to be detrimental to the future prosperity of the company.* The company has conscientiously endeavored to sell only those heating appliances which can be depended upon to be odorless, such a fire being found in the new radiant and reflector types. In some instances, a number of these appliances have been found defective, the gas burning incompletely, giving forth fumes very obnoxious to the customer, and if allowed to remain in this unsatisfactory condition would eventually mean a loss to the company. An examination of a number of these defective heating appliances revealed imperfectly adjusted or clogged burners, or else the burners or cones used in the radiant type of fire did not sit directly over the ports, or were in themselves

SAVE
THE
COAL
Gas fuel is specially fitted for room heating, and one need not fear the coal shortage if the Modern Radiant Gas Fire is installed in the different rooms of the house.
Strict economy is assured if your heating system is under perfect control. No dust or dirt, easily regulated. These Fires do all and more than we claim for them and are guaranteed absolutely odorless.
Call at our salesrooms and see these Modern Gas Heaters in operation, or send for representative to call with full particulars.
The Consumers' Gas Co.
12-14 ADELAIDE ST. W. Phone ADELAIDE 2180

AS A MEANS OF COAL SAVING GAS WAS ENERGETICALLY PLAYED UP

imperfect in this manner, causing a smothering of the flame. This smothering can only be detected after a very careful examination of the fire while burning.

Gas managers who want to hold the goodwill and patronage of the citizens of their respective towns should make it a point to sell only such appliances as can be depended upon to give real satisfaction to the customers, and no appliance should be forced on people who have no real need of same. No appliance should be handled that the company cannot guarantee, and every customer should be made to feel that the gas company is truly endeavoring to please them, and not itself, when selling appliances. It is to be a mutual transaction for the benefit of both.

Free Trial to Physicians

One of the first things attempted and carried out in the sale of gas appliances in Toronto was to interest local physicians in the gas-heating question. This was done through local and Canadian medical journals, advertisements being placed in same displaying testimonials from English, French and Canadian physicians regarding hygienic value of the radiant gas fires, properly installed.

THE COMPANY WAS NOT SPARING IN ILLUSTRATING ATTRACTIVE ROOM SETTINGS IN WHICH THE GAS HEATER FORMED AN IMPORTANT PART

Physicians were urged to give the heaters a fair trial, and if, after such a trial, these fires were found unsatisfactory, the company would have same disconnected and returned. The idea back of the free trial was to create a favorable impression among physicians in general, because the company believed the physician was one who could spread the merits of real good fires, through his profession, which brought him into contact with the general public. Most of the physicians at the beginning of the campaign were prejudiced against the use of gas fires, having in mind the old type of gas fires formerly sold by gas companies. Physicians were advised to try the fires under all conditions, and were allowed to make scientific tests if they wished to do so, the company believing that if they found the fires as per claims made for them, these men would naturally recommend them to their patrons whenever they happened to be in a home where the old type of gas fire was in use.

The result of this work was very gratifying to the company, resulting in the sale of many of the fires and in receiving a number of testimonials from them. These testimonials, in addition to other scientific data, were published in booklet form by the company and sent broadcast among the company's customers.

Architects and builders were also appealed to through advertisements in the construction and building journals, and these advertisements were followed up by the gas salesmen, whose work took them among architects and builders. Copies of these advertisements, occupying full pages in one of Canada's best architectural journals, are reproduced herewith. Copies also appeared in the local press. Citizens were advised to use gas instead of coal for auxiliary heating purposes, and their attention was called to this newer type of odorless and guaranteed gas fire.

Photographs of a number of satisfactory installations were secured from customers, who were high in their praise of the new appliances. Half-tone engravings were made up from these photographs and used to illustrate booklets. One of these booklets was entitled "Just Heat." This booklet also contained a number of testimonials, and a general treatise on the residence heating question and the reason why the radiant gas fires were best adapted to such purposes.

The company's representatives were also posted in the relative merits of the many gas fires on the market, and were thus placed in a better position to proclaim the merits of the newer forms of fires when calling upon customers.

The photographs were obtained from houses situated in exclusive residential districts and homes owned by influential citizens fairly generally known through the locality, and it was found that if Mrs. Jones used these fires, Mrs. Smith would likewise consider them worth having.

The result of the company's activities in developing a sale for gas fires has resulted in materially setting aside the prejudices that once existed against the use of gas as a heating agent.

Somewhere in the neighborhood of 5,000 English radiant gas fires have been sold in Toronto in the last few years. The only difficulty at the present time is being able to obtain a sufficient supply of the varied designs.

THE PHOTOGRAPHS WERE TAKEN MAINLY IN THE BETTER CLASS HOMES

THE MOST SATISFACTORY GAS FIRES IN THE WORLD

Radiant Gas Fires

Unexcelled by any other Auxiliary House Heating Fires on the Market

In all rooms where warmth is essential to comfort, and economy in labor and expenditure is a consideration, gas fires have become a necessity. Radiant Gas Fires have come on the market to stay, and hundreds and thousands of homes are now equipped with them. These Fires are

Growing in Public Favor by Leaps and Bounds

Medical Men and Architects Endorse Radiant Gas Fires After Once Using Them

That Radiant Gas Fires are advantageous to health has been stated again and again by eminent doctors, many of whom have adopted these aids to comfort, cleanliness and economy, both in their private and consulting rooms. The Radiant Gas Fire is the only one giving a reliable heat capable of regulation at will, that causes no dirt, dust, nor smoke, entails no labor, and prevents all extravagance.

Absolutely Odorless

Architects can prove all these statements in their own homes at our expense

You can be your own judge as to the merits of Radiant Gas Fires. Radiant Gas Fires are the coming home heating medium, and it is our desire that you try for yourself what they will and can do toward solving the Residence Heating Question.

Coal fires are well recommended by their long use, but sanitary methods are now telling against them. People are getting tired of carrying coal and ashes, shaking down the fire; and the dust and noise attendant to a coal fire. They are looking for something more modern, and are becoming acquainted with the other type of Radiant Heat apparatus—the Gas Fire.

Radiant Gas Fires are Very Economical in Operation, and altogether are the Ideal Auxiliary Home Heating Mediums.

Try These Fires in Your Own Home. If You Don't Find Them as Claimed by this Company, they will be Removed Without Expense to You. This Applies to Toronto Installations Only.

For Further Particulars Apply to

The Consumers' Gas Co. 12-14 Adelaide St. West, Toronto Phone Adelaide 2180

THE ABSENCE OF ODOR HAD TO BE ESPECIALLY EMPHASIZED, DUE TO PAST EXPERIENCES OF CONSUMERS WITH ODOROUS GAS LOGS

Without a wholesome belief on the part of the manager and his representative in what these appliances will do in the way of heating, results will not be possible.

There is no doubt that the future will see thousands more of these odorless gas fires in use, resulting in a big outlet for the selling of gas, and at the same time conserving our coal supplies by releasing coal formerly used in open grates for other purposes.

In times past householders who were using the older types of fires used them only when it was absolutely necessary to do so, because of the obnoxious fumes and odors therefrom, and it is needless to say such fires return very little to the gas companies; but nowadays people who have tried and are using the newer fires do so frequently, and find them very satisfactory heating agents.

Cards to be Distributed Among Housewives to Teach Gas Saving

In order to acquaint housewives with practical methods of saving gas so that the consumption may be decreased and thereby provide a saving in coal for war purposes, Director Raymond, of the department of streets and public improvements, Newark, N. J., recently authorized Gas Inspector Francisco to have printed and distributed cards containing many practical ways of gas savings. The following list has been compiled and will be issued for general distribution:

Don't use open flat-flame burners. Use mantle burners everywhere, they burn only one-half to one-quarter as much gas as the open-flame burner and give two to three times the quantity of light.

Turn off gas lights when not in use. Matches are cheaper than gas.

When your room is sufficiently heated turn the gas down or entirely out. Buy a good thermometer and keep your room from 68 to 70 deg.

It is wasteful to use a gas range for heating a room.

Never permit the flame of a gas range burner to lap over the sides of any cooking utensil; all this gas is wasted.

When food comes to a boil turn down the flame. A full flame after the food starts to boil is a tremendous waste of gas.

Plan to cook your entire meal in the gas range ovens at one time.

When using a gas water heater only heat the quantity of water required.

Do not permit gas leaks; they are expensive and dangerous.

Regularly read your meter index. If you cannot do this send to the municipal bureau for the inspection of gas and gas meters for the pamphlet, "The Gas Meter and How to Read Its Index."

Pacific Company Wants to Supply Gas for Shipbuilding

The Pacific Gas & Electric Company and the Union Industrial Works, Inc., have filed with the railroad commission an application for authority to enter into an agreement for the receiving and delivery of gas. The Pacific company owns a gas distributing plant in Oakland and the Union works owns property in the Key Route Basin, at the foot of Fourteenth Street, Oaland, upon which it proposes to conduct a shipbuilding plant, for which it will need a great deal of gas. The agreement says that in order for the Pacific company to deliver the gas, a gas main will have to be extended to the works costing $25,000.

The shipbuilding concern will pay

part of the cost of installing the new main.

In consideration of the extension, the Union company guarantees the Pacific company $12,000 worth of gas to be taken each year. The Pacific company promises to give the Union company 300,000 cu. ft. of gas for each day of eight hours.

Auxiliary of Illinois Manufacturers' Association to Study Gas Fuel Problems

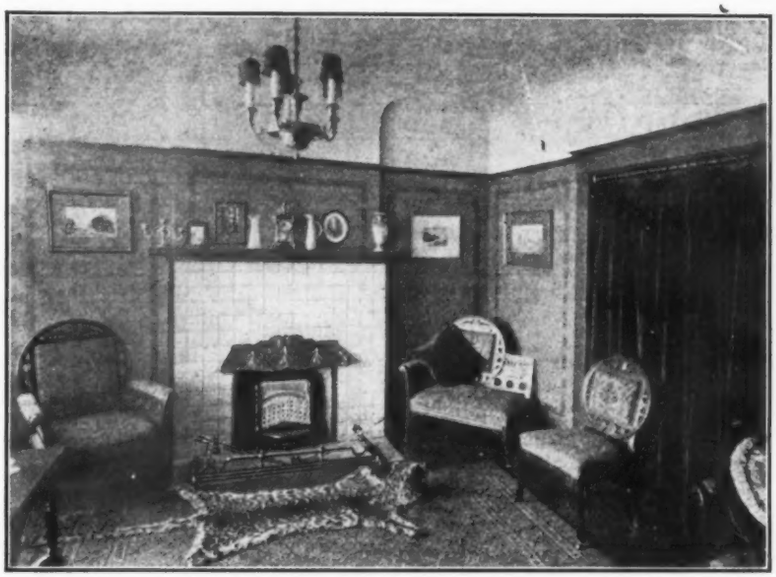
The Illinois Manufacturers' Fuel Association, as an auxiliary of the Illinois Manufacturers' Association, is the evolution of the Illinois Research Society, which was formed a few weeks ago. Under the reorganization it had also been created a section of the Western Society of Engineers.

All technical problems, it is expected, will be worked out in the latter section, while questions relating to the commercial phases of gas fuel will be discussed with the auxiliary of the Illinois Manufacturers' Association.

The Illinois Manufacturers' Association intends shortly to begin the publication of a journal to be devoted to the work of the fuel auxiliary. Reports on investigations into the adaptability of gas as fuel in the industries, in the place of other fuels, will be one of the chief features of the new journal.

One of the important phases of the gas situation in Illinois is the fact that the United States Fuel Conservation authorities are pushing gas as a substitute for anthracite coal, and are urging the many manufacturers to take it up. The conservation authorities are accompanying their recommendation with figures showing the great efficiency and economy of gas.

The fuel auxiliary has a membership including only those who were present at the original meeting. However, there are 1,500 persons in the State who are eligible to membership. In addition the members of the Illinois Manufacturers' Association have the right to nominate members, and it is expected by the temporary secretary, H. H. Clark, that the membership of this newly formed body will ultimately mount into the hundreds.



THE TORONTO COMPANY FOUND IT MADE BUSINESS TO LET MRS. SMITH KNOW THAT MRS. JONES HAD INSTALLED ONE OF ITS HEATERS

Cedar Rapids Company to Get Higher Rate

The city of Cedar Rapids, Iowa, is to have a raise in the gas rate from 90 cents per 1,000 to $1.05.

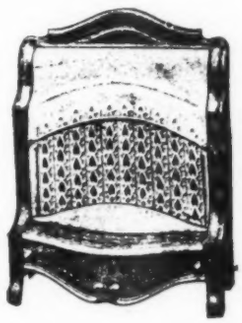
This action on the part of the city is taken after due consideration and examination of the business of the Cedar Rapids Gas Company.

Janesville Company Asks for Increase

A petition has been filed with the Railroad Commission of Wisconsin by the Janesville (Wis.) Gas Light Company asking for an increase of its rates and for a continuance of the order made Feb. 6, 1918, until a hearing upon the application for increase can be had.

The petition sets forth that due to the increase in cost of coke, coal and oil the company found it necessary to petition the commission for an increase in rates.

The company also claims that they are confronted with new taxation and that there is a prospect of a new enterprise coming to Janesville, and the company will be requested to have an increase in order that it may make extensions from its earnings.



Absolutely Odorless, a Gas Grate to Give You More Pure Heat

THEY are very economical, highly decorative, and as an aid to ventilation, are recommended by many physicians.

Our booklet, "Hygienic Solution of the Residence Heating Question," conclusively proves that "For Domestic Apartments, radiant heat, supplemented by a moderate proportion of convected heat at a low temperature, is the best form of warmth." This is the class of heat given by the Parkinson Gas Fires handled by this Company. The booklet mentioned contains much interesting information about the heating question. We will be pleased to mail a copy to any one who may be interested.

We have fires at various prices from $8.00 to $26.00. We would be pleased to demonstrate them to you at our Salesrooms, and also to discuss your heating problem. If you are unable to call, phone us, or send us a post-card, and we will have one of our representatives interview you.

The Consumers' Gas Company of Toronto

12-14 Adelaide St. W. Telephone Adel. 2180

GAS IN THE PUBLICITY MATTER OF THE TORONTO COMPANY WAS HELD TO BE THE ANSWER TO THE PROBLEM OF HYGIENIC HEATING OF THE HOME

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SIXTIETH YEAR

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Up to the Gas Companies If They Wish to Monopolize Fuel Business in Baking Industry

The following is clipped from the *Bakers' Weekly:*

"On another page we print an article on the possibilities of introducing gas more generally as fuel in bakeshops. We believe that bakers everywhere would welcome the possibility of using gas to heat their ovens with, if for no other reason than that the use of gaseous fuel would be inducive to still greater sanitation and cleanliness in the bakeshop of the country. It seems to us that the question whether or not gas can be used more freely in the baking of bread is chiefly up to the companies who monopolize the manufacture of gas in the United States. Having a monopoly, the gas companies hitherto have been somewhat unwilling to make reasonable price allowances when their product was used in large quantities, and for this reason the use of gas as a fuel in bakeries has up to now been almost prohibitive. The more general use of gas would, no doubt, be a good thing, but it is squarely up to the gas companies to come to an understanding with the bakers of the country if they wish to displace coal and other fuels now used in the bakeshops of America. Most gas companies make special contracts with the cities in which they operate, and since the business with the bakers surely would be one of huge volume, there is no good reason why similar concessions should not be made to the manufacturers of the staff of life."

The article alluded to is an abstract of an article by Edward F. Davis, published previously in the AMERICAN GAS ENGINEERING JOURNAL. No particular installation was named by the author, but it is our understanding that the examples cited were installations in cities where no preferential rates are in effect. Thus with gas at no lower cost, at the least, than eighty cents a thousand, the industrial gas salesman was able to convince these bakers they gained some advantage that in the end must directly represent a gain to the pocketbook by using gas.

The AMERICAN GAS ENGINEERING JOURNAL is on record as being in favor of lower rates for large quantity consumers than for small quantity consumers. Such is the only logical method of charging for any commodity, and the difference in charge should be the difference in cost of rendering the service unit for unit. We are thus far in agreement with the *Bakers' Weekly.*

But Mr. Davis has demonstrated that *cheap* gas is not necessarily an essential to securing the bakery business. The installations he cited were sold on the basis of eighty-cent gas or higher.

The present is a poor time to talk of lowering the cost of gas to any consumer. The great bulk of the consumers of some companies we know of who are selling gas as low as eighty cents a thousand are domes-

tic consumers, and are being served at a cost to the companies that is possibly ruinous. It may be that there is some profit in the large consumers. Perhaps they in part act as a buffer—give the gas companies a degree of leeway that enables them to exist at all. It would indeed be suicidal for such companies to, of their own volition, cut off the profit on this class of business to obtain more of the same kind. Even gas companies have to pay their bills. There is a way, however, by which gas companies can furnish what in effect is cheap gas, without actually selling it cheap, as measured by the unit. That is by minimizing the amount necessarily used to perform a given function.

The answer apparently furnished by Mr. Davis is efficient appliances. By such means big quantity business is being gotten still by some gas companies without the necessity of preferential rates, and can be gotten by many others. These are days when the man who buys the gas-consuming appliances his company sells *must* be thorough and *must* use his head. He wants to know what appliances of the vast variety he has to select from are *the* efficient appliances. This requires an unusually broad knowledge of available gas appliances and an unusual knowledge. But unless this man possesses such qualities woe unto his company's financial stability. Because of his lack of them it may be losing at least one kind of business that might provide the leeway necessary for it to hobble along at existing rates until the mills of the commission grind out justice and reasonable treatment.

Effective Publicity

Publicity work that takes in the "human interest" element, and which carries an appeal to the man in the street, is the kind of publicity that will prove effective for every gas company. Particularly at the present time is it timely, for every company has a splendid opportunity to help carry on patriotic propaganda and by simple association bring out the good work that is being done.

Too many companies looking over the situation are prone to make exceptions of themselves. They are too apt to declare that local conditions are so different that they could not be expected to take up such a radical step.

This attitude is wrong. It is a mistake that has been made so often in the past that companies to-day find themselves in embarrassing situations and faced by a stone wall of distrusting public opinion that they themselves are responsible for.

Don't go on the basis that the affairs of your company are nobody's business, because they *are* the affairs of your consumers, and they are well within their rights in demanding definite knowledge.

These may seem to be strong statements. They are meant to be. A new era is here; an era which is radical in its changes, and it demands radical treatment to meet those changes. This is the time to adopt the policy and it will more than pay for itself in the long run.

An excellent example of this modern efficient method is the Kings County Lighting Company. We recently saw a quarterly statement which showed that that company had secured twenty thousand lines of free publicity in the daily and weekly press of New York City. An analyzation of the publicity secured showed that every activity of the company had been covered. Most important of all was the underlying fact, however, that the company was shown to be a human factor and controlled by the same conditions and elements which every consumer encounters. It was indirect, but the results were none the less permanent and direct in their return.

The best part of it all is, moreover, the company, not satisfied with its past laurels, is pursuing the campaign with unabated vigor and pretensions and extensive plans for the future. There is an old proverb that runs to the effect, "Let he who hears, heed." It is applicable right now.

Duty of Those Behind to See That World Reaps Full Benefit of Lessons War Has Taught

It is one of the many regrettable features of human life that nothing approaching full advantage can be taken of the whole sum of human experience. Up to a certain point, however, the mistakes of one group of people can be used as danger-signals or sign-posts for a succeeding one; and although the war, when viewed as a calamity which has visited this generation, is an incalculable horror, its lessons and its discipline, if properly read and assimilated, may be turned to unceasing benefit by succeeding generations. It is the duty of those among us who may survive this visitation, or who, by the gallantry and self-sacrifice of our younger fellow-countrymen and allies, have been permitted to follow our respective callings in relative peace and comfort, to give our minds whole-heartedly to the task of so focussing these lessons that the benefit obtainable from them may be secured to our successors.—*Dr. M. O. Forster.*

Partridge Company Abandons Well as Dry

The oil well on the Sentrey tract east of Hutchinson, Kan., has been given up as a dry hole by the Partridge Oil & Gas Company, and the casing is being pulled up and probably will be taken to Texas, where it will be used on leases owned by the company.

The drillers went down 3,450 ft., but found no indications which would cause them to feel it would pay to go any further.

The impression given out by the officers is that this pulling up of the casing does not necessarily mean that all drilling would be abandoned on the leases held around Hutchinson by this company, but that none would be done at present.

So once more Hutchinson's dream as an oil metropolis has vanished.

PATENTS PERTINENT TO GAS INDUSTRY

A Chute for Loading Vehicles with Coke

Patent No. 1,260,309; described in Patent Office *Gazette*, March 26, 1918, page 783. Hugh B. Brokenbrough, Fort Dodge, Iowa. Filed June 12, 1916. Serial No. 103,197. (Cl. 214-42.)

This chute operates from a track and is arranged to swing in the direction of the vehicle. A trip lever is provided which is released by the vehicle. The object of the chute is to spread the load out evenly in the body of the vehicle while the vehicle is in motion.

A Method for Making Siliceous Firebrick

Patent No. 1,260,398; described in Patent Office *Gazette*, March 26, 1918, page 809. Harry A. Kennedy, Clearfield, Pa. Filed Sept. 28, 1917. Serial No. 193,852. (Cl. 106-10.)

This firebrick is composed of silica particles of substantial size free from finely powdered silica or sand, and is mixed with a binder of fireclay.

An Automatic Absorption Refrigerating System Which Can Be Operated by Gas

Patent No. 1,260,427; described in Patent Office *Gazette*, March 26, 1918, page 817. Josiah L. Merrill, Pittsburgh, Pa., assignor to The General Refrigeration Company, a Corporation of Ohio. Filed Dec. 23, 1910. Serial No. 598,998. (Cl. 62-5.)

The generator of this system is so constructed that by means of the pressure within the generator the flow of gas through it can be shut off automatically and a flow of water introduced in the tubes.

A Gas Burner Formed from Two Sheets of Metal

Patent No. 1,260,442; described in Patent Office *Gazette*, March 26, 1918, page 821. George E. Pickup, Newark, Ohio, assignor to The Wehrle Company, Newark, Ohio, a Corporation of Ohio. Filed May 21, 1917. Serial No. 169,843. (Cl. 158-99.)

This burner has the burner head, mixing bowl and connecting supply conduit formed from two substantially similar sheet metal sections. These sections have protruding edges which are secured together to form a gas-tight joint.

A Method for Recovering SO_2 from Gases Containing the Same

Patent No. 1,260,492; described in Patent Office *Gazette*, March 26, 1918, page 837. Utley Wedge, Ardmore, Pa., and Frederic A. Eustis, Milton, Mass. Filed May 29, 1915. Serial No. 31,208. (Cl. 23-1.)

The method used consists in causing a liquid to absorb the SO_2 from the gas containing it. The SO_2 is then extracted from the liquid and afterwards deprived of any liquid which may still be associated with it by heating it while under less than atmospheric pressure.

An Adjustable Combination Wrench

Patent No. 1,260,505; described in Patent Office *Gazette*, March 26, 1918, page 841. Charles F. Bloch, Rocky Ford, Col. Filed Nov. 26, 1917. Serial No. 204,015. (Cl. 81-170.)

This wrench is composed of a jaw having a tubular shank which slides over the solid shank of the other jaw. The solid shank is fitted with an adjusting screw having a folding handle. The jaw faces have both flat and pipe gripping surfaces.

A Coal Car Cover to Prevent Loss of Coal Through Theft or Falling

Patent No. 1,260,178; described in Patent Office *Gazette*, March 19, 1918, page 685. Emanuel M. Shortar, Birmingham, Ala. Filed Jan. 2, 1918. Serial No. 210,016. (Cl. 105-78.)

This device consists of arched rack bars fitted to the ends of the car and a pair of shafts having wheels resting on these rack bars. By means of mechanism placed on the bars the shafts are rotated and unwind, and place over the coal nets which prevent the coal falling off or being removed until the nets are again rolled up.

A Sheet Metal Split Pipe Collar

Patent No. 1,260,628; described in Patent Office *Gazette*, March 26, 1918. Frederick Biedenmeister, New York, N. Y., assignor to Good Manufacturing Company, New York, N. Y., a Corporation of New York. Filed March 7, 1917. Serial No. 153,002. (Cl. 126-317.)

This collar is formed of two similar semi-annular sheet metal plates. Each plate has an integral tongue extending forward from one abutting edge and an integral ear bent backward from the other, with a slot through the bent portion of the ear. The tongue of each plate is shaped to pass through the slot in the ear on the opposite plate and engage the walls for the purpose of holding the plates together.

A Tank Water Heater Which Is Enclosed in the Tank

Patent No. 1,260,757; described in Patent Office *Gazette*, March 26, 1918, page 915. William S. Davis, Sacramento, Cal., assignor of one-half to Charles E. Emerson, Susanville, Cal. Filed June 11, 1917. Serial No. 174,157. (Cl. 122-37.)

This water heater has the burner placed at the bottom of the center of the tank. The heat passes up through a coil, then around a conical container and thence up through a flue which extends through the top of the tank. The pipe to the coil extends down through the flue from the top of the tank. The outlet of the coil is just above the top of the burner flames.

A Gas Heated Soldering Iron

Patent No. 1,262,047; described in Patent Office *Gazette*, April 9, 1918, page 328. Benjamin E. Hicken, Prairie Hill, Mo. Filed Feb. 12, 1916. Serial No. 77,962. (Cl. 158-26.)

In this iron the gas supply pipe passes through the handle, the adjustable air inlet is in a coupling between the handle and the rod to the copper, and the burner is right at the base of the hollow copper.

Chicago Manufacturers Anticipate Big Demand for Heating Appliances

Chicago manufacturers of house gas-heating appliances are anticipating an active demand beginning at the first indications of fall weather. This was announced Aug. 6. The reason is, of course, in the current coal situation. Manufacturers are privately urging their friends to provide themselves.

Efficient space heaters are being placed on the market. In addition there are the usual types of gas radiator.

Webster & Southbridge Company Files Notice of Increased Capitalization

The Webster & Southbridge Gas & Electric Company has filed a certificate with the Massachusetts Gas Commission stating that it has increased its capitalization by $132,000. In 1915 the company increased its capitalization by $125,000 and in 1907 by $297,500. As of June 30, 1916, the outstanding capital stock amounted to $467,500, so that if the new increase is allowed it will bring the total up to $500,000.

New Haven Company Gives Bonus to Employees

The New Haven (Conn.) Gas Light Company has just granted a substantial increase in the salary of its clerical help in the shape of either a bonus or an advance in present earnings. About 120 employees at the head offices and in the stove room on Crown Street are affected. All of these, who have been paid by the week, will get the increase from July 22. The others, who have been paid by the month, will get their increases in the form of a bonus. The increases or bonuses apply to practically everyone in the clerical employ of the company.

The men at the works and on the street had been already granted their increase since the first of the year. It cannot very well be stated what the exact increase is, but it will mean an extra outlay by the company of about $12,000.

Move Brattleboro Gas Offices to Boston

Vice-president Howard L. Olds, of the Twin State Gas & Electric Company, recently announced that the company has decided to move the general offices from Brattleboro, Vt., to Boston, Mass., Sept. 1.

The offices were moved to Brattleboro from Dover, N. H., in 1918, and they would remain there had there been no curtailment of railroad facilities, but because of the removal of trains it is now more convenient to reach the seven divisional offices from Boston.

Byllesby Men in Salvation Army Drive

The Salvation Army drive for "doughnuts and coffee for the boys," which started in Chicago Aug. 12, was prosecuted along the same lines as the last Liberty Loan campaign. Byllesby men had prominent parts. R. J. Graf, vice-president and secretary, was vice-chairman of the committee for contractors, builders and engineers of the trades division. H. V. Coffy, of the publicity department, was captain of the team for solicitation of engineers. A. L. Flynn, of the legal department, and M. C. Wiley, of the engineering department, were members of this team.

1,062 Gas Meter Lights Eliminated 2 Nights a Week in St. Louis

The city lighting department of St. Louis, in a conference with the local fuel administration regarding the carrying out of the Federal Administration's "lightless nights" order, decided upon the elimination on Monday and Tuesday nights of 1,062 gas meter lights on streets, viaducts and in parks.

Commission Makes Effort to Secure Adequate Supply of Coal for Smaller Gas Companies of Indiana

The Public Service Commission of Indiana has just stepped to the front in an effort to assist dozens of the smaller gas plants in the State to weather through the present wartime emergency conditions by impressing the Federal Fuel Administration with the dire need for immediate action to insure an adequate supply of gas coal to those companies depending on certain coals for the production of their service.

Because of the various coal zone orders, promulgated by the Fuel Administration, Indiana gradually has been left out of the distribution of gas coal, except that large companies, or large systems of companies, are able to obtain the fuel they desire. The small consumer, however, who operates his gas plant in towns and cities of from 2,500 population to 50,000 population, is unable to obtain adequate gas coal supplies, since the Indiana coal practically is worthless as a gas coal. It is true, the commission explained to the representative of the JOURNAL, that the Federal Fuel Administration has provided an exception in the case of gas companies to its general prohibition of the use of eastern Kentucky coal in this district, but as a practical development the small gas company now is unable to obtain shipments of the eastern Kentucky coal, although it has such an exception permit from the Fuel Administration. The main trouble seems to be that the coal operators are refusing, or failing to ship coal ordered by the smaller gas concerns, and thus, although the Government provides a system whereby permits for eastern Kentucky coal may be obtained by any of the gas companies, "the little fellow is not getting it."

The commission has just issued the following statement in the matter, and appends thereto a letter Paul P.

Haynes, of the commission, has sent to H. A. Garfield, Federal Fuel Administrator:

"Reports reaching the public service commission indicate that a critical situation is rapidly developing with the coal gas plants of the State. Numerous complaints as to the service rendered by coal gas plants are being received. In Vincennes, Connersville, Kendallville, Auburn, Garret and other places reports from consumers, and investigations by the commission's engineers show that extremely poor service is being rendered. In some cases the B.t.u. has fallen as low as 300 to 350.

"The commission has taken the matter in hand, and will immediately provide regulations which will enforce the rendering of adequate service. A general survey of all of the gas plants of the State will be made, and frequent reports as to quality and pressure of gas will be required.

"In this situation, however, much complaint is made by gas companies that the quality of coal which they are able to secure does not permit production of good gas. The commission, having this matter in mind, has directed the following letter to the Fuel Administration:

"Stern necessity demands that we call your attention to operating conditions in Indiana coal gas plants.

"In Indiana our gas utilities manufacture two or three kinds of gas, namely, by-product gas, carburetted water gas and coal gas. The first named, the by-product gas, is made in large coking plants, such as you will find in Indianapolis, Terre Haute and Gary. These plants are able to take care of their gas coal supply in a fairly satisfactory manner, but with coal gas plants, the situation, both from the standpoint of service and coal conservation, is serious.

"Coal gas plants are located in towns and cities with populations ranging from 2,500 to 40,000 or 50,000, and the situation affects practically all centers other than the larger cities.

"Practically all of these coal gas plants are giving extremely poor service. In many instances the B.t.u. averages are as low as 350 to 400. Hardly without exception the gas companies charge that their failure to render adequate service is due to the lack of a proper supply of gas coal.

"When the Eastern coal was zoned away, many of them substituted Kentucky coal, which has much superior gasing qualities than the Indiana coal. Now Kentucky coal has practically been taken away from them, and they are driven to the use of Indiana coal, which in most instances is impossible of utilization as a raw material for adequate gas production.

"This situation has not only resulted in extremely poor service, which of itself is a matter of vital concern, but is directly and actively resulting in the discontinuance of the use of gas for domestic purposes by large numbers of consumers, and the substitution by them of coal for cooking and general domestic purposes. It is obvious that a continuance of this situation will mean a greatly increased coal consumption. In other words, the conservation measure and plan of zoning away from Indiana and other States all suitable gas coal is directly increasing the consumption of coal, and doing the very thing which the plan was designed to prevent.

"It is self-evident that the providing of coal gas plants with suitable coal is a need that is urgent and vital, and in order to prevent a serious crisis should be vigorously and immediately enforced. A brief continuance of present conditions will result in the permanent installation, substitution and use of coal ranges and coal stoves by thousands of consumers in place of gas stoves.

"Furthermore, gas companies, due to abnormally high operating costs, have sought and are seeking rate increases. In practically all cases these increases have been justified and allowed. But now we are face to face with the situation where the consumer is paying the higher rate, but getting poorer service, or no service at all.

"Already the situation has in many cities and towns created intense public dissatisfaction and unrest, and if continued may prove a factor disturbing the welfare of the public, which is now so essential in the successful prosecution of the war.

"We most earnestly urge that immediate and vigorous steps be taken to supply gas coal plants with suitable coal."

THE DELAWARE OIL & GAS COMPANY, Wilmington, Del., to mine for oil, gas, petroleum, minerals and mineral substances; capital, $200,000. R. E. Grant, F. H. Mitchels, Columbus, Ohio; John Williamson, Sunbury, Ohio.

Brooklyn Company Temporarily Restrained from Raising Rates

An order temporarily restraining the Brooklyn (N. Y.) Borough Gas Company from charging $1.25 for gas, or any rate in excess of 95 cents, was signed Aug. 5 by Supreme Court Justice Russell Benedict. Justice Benedict's order, which was obtained in behalf of the public service commission by William M. Ransom, requires the gas company to show cause why it should not be permanently enjoined from charging more than 95 cents.

Great Falls Consumers to Pay Increased Rate

While denying the application of the Great Falls (Mont.) Gas Company for an order permitting it to make a service charge of 25 cents for each customer, the State utility commission has granted it permission to increase rates 20 cents per 1,000 cu. ft. of gas, on the block system. The increase will mean $8,500 a year to the company.

During the fiscal year ending June 30, 1918, the utility sold 47,783,300 cu. ft. of gas, from which it derived a net income for interest and dividends of $23,626.58. It was therefore shown in this report that under present prices the operating will increase during the next twelve months $4,843.73, resulting in reducing the net income for the fiscal year ending June 30, 1919, to $18,793.85. An increase of 20 cents per 1,000 cu. ft. of gas sold, allowing for discounts, will increase the earnings approximately $8,500, thus increasing the estimated net income to $27,292.85.

Railroad Commission Authorizes Increase for Stoughton

An increase of gas rates in the city of Stoughton (Wis.) was authorized by the Wisconsin Railroad Commission Aug. 3.

Under the new schedule for the first 10,000 cu. ft. of gas sold the rate is $1.70; for the next 10,000 used the rate is $1.50. With every additional 10,000 cu. ft. of gas used the rates decrease until the consumer using over 80,000 cu. ft. gets a rate of $1.

The new rates are to take effect as of Aug. 1, and to continue in effect until Dec. 31, unless changed by the commission. A discount of 10

cents is allowed for the payment of bills before the tenth of the month. The minimum bill shall be 50 cents.

Shipments of Oil from New Well of United Fuel Gas Made

Shipments of oil from the new 2,000-bbl. well brought in by the United Fuel Gas Company, a subsidiary of the Columbia Gas & Electric Company, were started Aug. 6, with, shall be made for replacing or tank cars to the Ohio Cities Gas Company.

The latter company has a contract to purchase the oil production of the United Fuel Gas Company. Shipments by tank cars are necessary for the present, as there is no pipe line near the well, but railroad facilities are good. The Ohio Cities Gas Company has started construction on a branch pipe line to the well which will be connected with its main trunk line.

Due to the absence of a pipe line the well is only being run part of the day. The new well is known as No. 2, Ward Tract, and is located in the Cabin Creek district of West Virginia.

Punish Violators of Lightless Night Order in Chicago

A campaign to punish violations of the lightless night order in Chicago is being vigorously prosecuted, with the result that fewer violations are being reported. A large number of cases are already scheduled for attention by the courts. Chairman Almert, of the local conservation committee, announced that hereafter all violators of the lightless order will be vigorously prosecuted.

Particular difficulty seems to be encountered with violators of that part of the order relating to display lights or signs. Owners of these signs appear to be the most flagrant in their disregard of the order issued as a conservation measure on behalf of the Government.

Municipal Ownership of Sheridan Plant to be Considered

Municipal ownership of the plant of the Sheridan (Wyo.) Gas Company is being advocated among numerous gas consumers in Sheridan as the result of the report that the Denver bonding house which controls the Sheridan Gas Company is to appeal to the Wyoming Public Service Commission at Cheyenne for permission to "junk" the plant Sept. 1.

Installing Automatic Gas Appliances at Fort McPherson

The gas contract department of the Atlanta (Ga.) Gas Light Company is doing extensive work at General Hospital No. 1, Fort McPherson. The hospital buildings, the diet kitchens, the nurses' dormitories, and practically all the buildings are being equipped with the best of automatic gas appliances. One installment contains gas-heating apparatus for eighteen shower baths.

Newark Natural Gas Company Must Make Refunds

Judge C. H. Kyle, of Xenia, acting as judge of the Common Pleas Court at Newark, handed down a decision compelling the Newark (Ohio) Natural Gas & Fuel Company to refund to the citizens of that city $20,000 for charges when the gas pressure was not maintained according to the franchise.

Albany Municipal Plant Seeks $1.00 Rate

The Municipal Gas Company has filed with the public service commission a petition asking for permission for the company to suspend the practice of giving cut rates to patrons using large quantities of gas. At the present time there is a sliding scale starting with a reduction of 10 cents for consumers using over 10,000 ft., going as far down as 70 cents per 1,000 cu. ft. to patrons using more than 50,000 cu. ft. A straight $1 rate per 1,000 cu. ft. is sought.

Texas Gas Association Arranges Tentative Program for Convention

The following is a tentative program as arranged by the Texas Gas Association for the annual convention which is to be held at Fort Worth, Texas, Sept. 10 and 11, 1918:

Address by representative of the United States Fuel Administration; "Public Utility Conditions in the Southwest," by M. T. Walker, manager Beaumont (Texas) Gas Light Company; "Gas Heating," by A. T. Knies, manager Austin (Texas) Gas Light Company; "Oven Temperature Regulation," by C. K. Enos, of the National Stove Company, Lorain, Ohio; "Natural Gas Gasoline," by E. J. Raisch, gas department of the T. P. Coal Company, Thurber, Texas, and "The Factors Limiting the Production of Toluol," by P. E. Nichols, superintendent Galveston (Texas) Gas Company.

Kings County Company to Run Toluol Recovery Plant

The United States Government is to erect a $200,000 toluol recovery plant at the works of the Kings County Lighting Company, Fifty-fifth Street, Brooklyn, N. Y. Specifications have been approved, and work on the erection of the plant has begun.

The plant will be operated by the gas company under the supervision of the Ordnance Department of the United States Army. No time has been fixed for the completion of the plant, but work is being rushed so that the toluol extraction may be started at the earliest possible date.

Ralph Elsman, general manager of the company, says that the contract between the Government and the company is on a net cost basis. The entire output of the plant, which has a daily capacity of 8,500,000 cu. ft. of gas, will be turned over to the Government. After the gas has been passed through the toluol recovery plant, it will be turned into the holders for distribution to the company's 38,000 consumers. The United States Government will utilize the present facilities of the plant.

Big Beaver Files Application For Increase

The Big Beaver Gas Company has filed with the public service commission a new tariff of rates governing the distribution of natural gas in the boroughs of College Hill, Darlington and New Galilee and in the townships of Big Beaver, Chippewa, Darlington and Patterson, Beaver County, Pa., to become effective on Sept. 1, 1918.

The new tariff makes increases in existing rates by changing the unit rate from rates ranging from 30 cents net to 24 cents net per 1,000 cu. ft. to a straight rate of 40 cents per 1,000 cu. ft. for all gas consumed, subject to a discount of 5 cents per 1,000 cu. ft. if paid within ten days of date of bill.

Napoleon Council Denies Increase

City council, in adjourned meeting, turned down the request of the Ohio Gas, Light & Coke Company, of Napoleon, Ohio, for a 25-cent increased rate per 1,000 cu. ft.

The company claimed that the unusual conditions warrant such a raise and that the proposed resolution granting it could be repealed at the pleasure of the council. The council, on the other hand, held that the resolution amounted to an amendment to the rate ordinance.

The present rate is $1.25. Wauseon and Delta are supplied from the local plant and Bryan, Montpelier, Archbold and Stryker from the plant in Bryan.

Advanced Rates for Clinton

A decision handed down by the State public utilities commission July 18 canceled the present rates charged for gas by the Clinton (Mass.) Gas & Electric Company and made effective a new schedule, providing a charge of $1.45 per 1,000 cu. ft. The new rates are effective July 1, 1918. The old price for gas was $1.25.

Pennsylvania Companies Seek Increased Rates

The Lititz (Pa.) Manheim & Ephrata Gas Company, operating in Lancaster County, has filed notice of an increase in rates effective Sept. 1 in its districts.

Other notices filed with the public service commission were by the Luzerne County Gas & Electric Company, for gas in the Hazleton, Kingston, Plymouth and adjoining districts, and the Dempseytown Gas Company.

Interurban Company Files Increase Petition

The Interurban Gas Company, operating in Nazareth, Northampton County, Pa., has filed with the public service commission a supplement to its tariff of rates, to become effective on Sept. 1, 1918, increasing unit rates for gas to prices shown below:

Less than 3,000 cu. ft. per month, $1.80 per 1,000; from 3,000 to 20,000 cu. ft., $1.60; all in excess of 20,000 cu. ft., $1.35.

A penalty of 10 cents per 1,000 cu. ft. will be added to all bills not paid within discount period.

Change in Rates Made by Gettysburg Company

The Gettysburg (Pa.) Gas Company has filed with the public service commission a supplement to its tariff of rates, making this rule:

"A charge of $1.50, payable forthwith, shall be made for replacing or reconnecting a meter in any premises from which service has been discontinued within twelve months prior thereto by the same occupant, or applicant, or customer, or by the company because of breach of any rule of the company by the same applicant, occupant or customer."

Increased Rates Asked by Northern Indiana Company

The Northern Indiana Gas & Electric Company filed a petition with the public service commission July 31 for an increase in gas rates for Hammond, Whiting and East Chicago. The utility would charge $1.25 for gas where it now charges $1.10 in each of the cities. It would charge 60 cents where it now charges 55 cents for gas consumed in excess of 500,000 cu. ft.

In Using Gasoline "Stop the Leaks and Save the Drops" Urges Oil Conservation Bureau

W. Champlin Robinson, director of the Bureau of Oil Conservation of the United States Fuel Administration, announces the appointment of C. C. Winningham, of Detroit, as chief of the Gasoline Section and director of publicity of the Oil Division.

Under Mr. Winningham's direction will fall the work of eliminating the waste of gasoline by distributors and users, the use and conservation of lubricating oils, and the inauguration of methods for the reclamation of oils that have been used.

The Oil Division of the United States Fuel Administration, through the methods of education and publicity, is seeking to avoid the necessity for enacting drastic rules which would result in the regulation, sale and use of these essential products.

The demands of the war call for a tremendous increase in the supply of gasoline, kerosene and lubricating oils. The increased requirements can be met, it is believed, if the public will only join hands in eliminating the careless waste now existing.

Leaks and spilling must be eliminated, and evaporation through leaving tanks and cans open must be stopped.

Motorists will have to stop the use of gasoline for washing parts of their cars, clothes or hands; they must cease racing their motors and running their engines when cars are not in motion, such as waiting at railroad crossings, etc.

Truck operators will be required to conserve gasoline by the inauguration of every means that will increase their mileage. Garage operators and automobile mechanics are to be instructed how they can eliminate waste.

The oil that is drained from crank cases, differential and transmission all possess a commercial value, and must not be thrown away. Even the residuous oil used in cleaning must be saved, for it, too, can be reclaimed.

August 20 Set for Hearing of South Jersey Rate Increase

The Public Utility Commission of New Jersey has set Aug. 20 for a continued hearing on an application of the South Jersey Gas Company, of Glassboro, N. J., for permission to increase its rates for 1,000 cu. ft. of gas from $1.25 to $1.80.

Injunction to Restrain City From Interfering With Collection of Increased Rate Denied Knoxville Company

Judge John E. McCall, of Memphis, has denied the temporary injunction which was asked for by Knoxville (Tenn.) Gas Company to restrain the city of Knoxville from interfering with the collection of the proposed new rate of $1.50 per 1,000 cu. ft. of gas, less 10 cents per 1,000 cu. ft. for prompt payment of the bill.

Judge McCall, in his opinion, states that sufficient averments have been made by the company to warrant the court taking jurisdiction in the case, at least for the present. He also states that, in view of the importance of the case, the court will be ready to dispose of the case on final hearing just as soon as possible.

THE PITTSBURGH (PA.) OIL & GAS COMPANY stockholders have authorized an increase in capital stock from $2,000,000 to $3,000,000, of which about $512,000 will be issued immediately.

Ohio Natural Gas Rates Increased

Natural gas rates have been increased an average of 50 per cent in practically all the Doherty Ohio cities interested with the exception of Mansfield, where none has been applied for. C. W. Sears, general maanger of the Medina Gas & Fuel Company, wires that Lima was the most recent example, the increases being from 35 cents per 1,000 cu. ft. to 50 cents for the summer months, while in winter the rates will be 50 cents for the first 25,000 ft., 60 cents for the next 5,000 and 70 cents for all over 30,000.

Earnings Combined Byllesby Properties

Gross and net earnings of combined Byllesby properties for the month of July, 1918, and for the year ended July 31, 1918, compared with the corresponding previous periods, are as follows:

Month of July	1918	1917
Gross earnings	$1,712,473	$1,465,313
Net earnings	676,769	652,412
Year ended July 31		
Gross earnings	21,036,672	18,137,161
Net earnings	8,585,959	8,558,587

Output of Nearly Seven Billion Feet For Indianapolis Last Year

A total of 6,689,851,263 cu. ft. of coal and water gas were manufactured from the fiscal year beginning Jan. 1 and ending Dec. 31, 1917, according to a gas production report made public recently by the public service commission.

In accordance with a State statute of 1917, the period covered by utility reports was changed from the fiscal year ending June 30 to the calendar year Jan. 1 to Dec. 31. In consequence of this change, the last six months covered by the reports filed for the fiscal year ended June 30, 1917, are included in the reports for the calendar year Jan. 1 to Dec. 31, 1917.

There were 4,151,403,793 cu. ft. of coal gas manufactured in the calendar year of 1917, and 2,538,445,470 cu. ft. of water gas manufactured. For the period from 1914 to 1917, inclusive, there were 14,359,991,232 cu. ft. of coal gas manufactured and 6,663,749,933 cu. ft. of water gas manufactured. This is a total of 21,023,741,165 cu. ft. of gas manufactured.

During the period from 1914 to 1917, inclusive, there were sold 19,115,435,393 cu. ft. of gas. For 1917 there were sold 6,406,254,813 cu. ft. For the 1914-1917 period there were used 22,887,792 gal. of oil, and in 1917 there were used 8,155,999 gal. For the four-year period, 2,386,072 tons of bituminous coal, carbonized, used, and in 1917 the figures given are 783,538. No anthracite was used.

Statistical Expert Compiles Table Showing Increased Cost of Materials

A statistical expert in the office of the Public Service Company of Northern Illinois has figured out a table showing some of the percentages of increase in the cost of commodities used in maintaining and operating gas and electric light plants. The table shows the high cost level of all articles as follows:

	Per Cent
Alcohol, wood	125
Bleaching powder	250
Brass	50
Copper bars, tubing	75
Copper cable	75
Cord, lamp and heater	100
Conduit	50
Fuses	65
Globes	75
Heating material, electric	45
Insulators, porcelain	70
Line, pole hardware	45
Motors	40
Pipe, cast iron	140
Pipe, steel	150
Pipe fittings	33 1/3
Shade holders	100
Steel	110
Transformers	25
Tubes, boiler	60
Wire, guy	90
Wire, copper	100
Washing machines	35
Wiring specialties	50

Experiment with Gas as Fuel in Manufacture of Steel Evolves New Product

An interesting experiment with gas as the fuel in the manufacture of steel has just been carried out at one of the plants of the Public Service Company of Northern Illinois.

The ancient process of the crucible has been made more difficult by the scarcity of materials. It was this fact that led to the test by the company of gas as a fuel. Under the process the basic gray iron was transferred from one cupola to another furnace of the reverberating type which was heated by gas.

No difficulty was found in maintaining the temperature at a degree which retained the material at the white heat requisite while it was undergoing the transformation.

The product of this gas-treated iron stood up under the severe tests applied to determine the quality of steel, and then it was found that a new product had been evolved, which the technical experts call a half steel.

This half steel, it is claimed, is suitable for many purposes for which high-grade steel has heretofore been employed. The experiment represents a step forward in metallurgy, since its manufacture is much cheaper and the process is greatly speeded up.

The subject of burner appliances has been made of great importance by the introduction of gas fuel in the industries. It is stated that different gas associations throughout the country intend to tackle it with more vigor.

Women Employed as Tracers in Construction Department of Empire

Three women have been employed by the engineering construction department of the Empire Gas & Electric Company in Bartlesville, Okla., as tracers. Men continue to do all the designing for the construction drawings. The designing department of the engineering construction department is in charge of C. M. Johnson.

Anthracite Coal Saved By Using Gas As Fuel

Many carloads of anthracite coal are being saved in Chicago every day through the use of gas as fuel. The Peoples Gas Light & Coke Company, through its service department, is materially aiding the United States Fuel Administration in the conservation of coal. The work is being done systematically, and the results so far are highly gratifying to the officials of the company.

An instance of what is being accomplished may be found in the fact that one large manufacturing concern in Chicago, after having installed gas appliances, has saved on an average of from four to five carloads of anthracite coal every day through the consumption of 300,-

000,000 cu. ft. of gas per month. According to reports to the gas officials, the service is evidently satisfactory from the standpoint of efficiency.

The company, through its commercial department, is rapidly extending the gas service to hotels, restaurants, bakeries and manufacturing plants, displacing not only coal consumption, but oil consumption. Important saving of fuel is thus being accomplished in all directions.

As a part of its conservation campaign, the company has issued an attractive catalogue for its hotel and restaurant divisions under the title "Gas Fuel Appliances for the Wholesale Preparation of Food."

In this catalogue the argument is put forth that gas, being "the soul of coal," is 100 per cent fuel, and the most economic fuel available for cooking and baking. A number of attractive points, among which is the loose-leaf plan, create a perpetual catalogue, always up to date because insertions or withdrawals may be made according to appliances added or discontinued.

A separate page with a large illustration is devoted to each unit, with detailed information as to construction, materials used, dimensions, prices and a summary of the specific uses for which the particular unit was designed. On the reverse side of each page is given a partial list of satisfied customers using the appliance displayed, and to whom a prospect may go for information.

The merits of a loose-leaf catalogue of convenient filing size, durable material and attractive design are offered, says the publicity manager of the company. Large institutions using a variety of fuel appliances, with this book on file, will always have the latest information at hand. It is economy from the advertising standpoint, inasmuch as only such pages as become obsolete need be replaced, and permits of sending literature covering such units recommended for particular requirements.

Natural Gas Rates For Several Ohio Cites Raised

By action of the councils of Lima, Wapakoneta and St. Marys, Ohio, natural gas will cost 50 cents per 1,000 cu. ft. on and after Oct. 1. This section gets its gas from the Medina field.

Iowa Falls Company Given $2.00 Rate

The price of gas at Iowa Falls, Iowa, goes up to $2 per 1,000 cu. ft., Judge Reed, of the United States Court, having ruled partly in favor of the Iowa Falls Electric Company, in its suit against the city of Iowa Falls. The company wanted $2.40 for gas, and the city was willing to grant a rate of $1.80. The court stepped in between.

Tornado Damages Oil Rigs

A tornado struck the Empire holdings in the El Dorado field recently. One hundred and fifty-six rigs were blown down and tank houses damaged. Most of the damage was in the Towanda field. The Paulson, Enyart, Cardey, Ralston and Abraham leases were damaged.

The loss from the tornado will be in the neighborhood of $120,000.

Muskegon Company Petitions for Increase

The Muskegon (Mich.) Lighting Company, now securing a $1 rate on gas, has appealed to the city council to permit it to boost its present figure to $1.25, asserting the increase absolutely required under higher cost conditions existing.

Council to Recommend Street Gas Light Contract For Cincinnati

The council committee on light for Cincinnati, Ohio, Aug. 6, decided to recommend to council a resolution authorizing Service Director Hornberger to enter into a three-year contract for street gas lights, both for the volume of consumption and the maintenance of the lamps.

Grant 10 Cent Raise For East Boston

The board of gas and electric light commissioners has granted the petition of the Boston Consolidated Gas Company, asking to be allowed to increase the price of gas furnished the East Boston Gas Company from 45 to 55 cents per 1,000 cu. ft.

Price of Coke at Albion Increased

Due to increased cost of production the Albion (Mich.) Gas Light Company has increased the price of gas coke from $9 to $9.75 a ton.

Fort Atkinson Rates Increased

The Fort Atkinson (Wis.) Gas Company has been granted permission by the railroad commission to increase the gas rates to $1.70 per 1,000 cu. ft., with a lowering of the rates for larger consumption.

Application Filed for Increased Rates at Portage

An application has been made by the Portage (Wis.) American Gas Company for authority to increase rates.

Application is made for an increase of 20 cents on each schedule of cubic feet per month as follows:

For the first 2,000 cu. ft. of gas per month, $1.50 per 1,000 net.

For the next 3,000 cu. ft. of gas per month, $1.40 per 1,000 net.

For the next 5,000 cu. ft. of gas per month, $1.30 per 1,000 net.

For the next 10,000 cu. ft. of gas per month, $1.20 per 1,000 net.

All over 20,000 cu. ft. of gas per month, $1.10 per 1,000 net.

All bills will be rendered at 10 cents per 1,000 cu. ft. above the foregoing rates, and will be subject to a discount of 10 cents per 1,000 ft., if payment is made on or before the last day of discount.

A hearing will be held at Madison Aug. 21, at 10 a. m., before the railroad commission, where all interested parties are requested to be present.

Ohio Cities Gas in New Home

Complete in essentials and convenience, the structure of the Ohio Cities Gas Company has been transformed since its purchase last winter from a retail store into a modern office building, with space sufficient for the economical administration of the company's business, aggregating in round numbers $60,000,000 gross annually. The building will house some 300 officials and attaches in the general management and accounting of the company's oil and gas business.

All producing, sales and refining divisions now report directly to the offices. The Columbus Gas & Fuel Company and the Federal Gas & Fuel Company, subsidiaries of the Ohio Cities, also have their offices in this building. The two gas companies are to have the east rooms on the first floor. Their offices have been designed with a view to service.

30,000,000 Cu. ft. Estimated Production of New Well

A gas well with an estimated production of 30,000,000 cu. ft. was brought in recently 3 miles east of Poteau, Ark., by the American Indian Oil & Gas Company.

Springfield Company to Issue Additional Stock

The Springfield (Mass.) Gas Light Company has been authorized by the board of gas and electric light commissioners to issue 4,443 shares of additional stock, par value $100, at $150 a share. The proceeds of the sale of 3,400 shares will be applied to the cancellation of promissory notes and of the remaining 1,043 to meet obligations incurred in the improvement of the company's property.

Members of City Councils Invited to Inspect St. Louis County Company's Books

In order to demonstrate the fairness of the advanced rate for gas service asked by the company, Louis A. Egan, vice-president and general manager of the St. Louis County Gas Company, has invited the city councils of all the municipalities served by the company to appoint a member who, with the appointees of the other municipalities, will be permitted to review the company's operations during the month of July. The petition of the gas company for increased rates is now before the Public Service Commission of Missouri.

25 Cent Increase Requested For Muskegon

The Muskegon (Mich.) Traction & Lighting company recently sent a communication to the city council, asking that it be allowed to increase its charge for gas at least 25 cents per 1,000 cu. ft. The communication, which was signed by John Q. Ross, president of the company, pointed out the great increase in the cost of production, and said that it was impossible for the company to furnish gas on the present basis.

The council was asked to give the matter immediate attention, and the question of cost for gas will be investigated during the audit of the books regarding the traction company.

Effort to Unionize Employees of St. Louis Public Utilities Under Way

An effort is reported under way at St. Louis to unionize the employees of all public utility companies. The agitation started among the employees of the Union Electric Light & Power Company. Later a mass meeting was called for the employees of the electric departments of the Union Electric Light & Power Company, the Laclede Gas Light Company, the Cupples Station Light, Heat & Power Company and the United Railways. Rumor has it that if the organization is perfected among the electrical workers, it will be extended to the gas workers also. So far as is apparent, however, the unionization efforts are not meeting with great success.

Greenwood Company Completes Gas Well

The Greenwood company succeeded in shutting in its new gas well near Muskogee, Okla., which is good for about 5,000,000 ft. and is located in the southeast corner of northeast of 28-15-17, and has moved the tools to a location east to drill another gas well which was brought in several weeks ago at 1,170 down to the lower sand.

Segregation of Lone Star Oil Properties Planned

Segregation of the oil properties of the Lone Star Gas Company, involving rights to its stockholders, is being planned. This company recently raised $1,000,000 from its stockholders with the express intention of using it for the development of its land, particularly for oil, and favorable results have been obtained.

The Lone Star company controls promising oil lands in Texas and Oklahoma. Part of this land is in territory close to that owned by the Texas & Pacific Coal & Oil Company, which territory appears to be some of the best developed in this country in recent years. The Lone Star company has more than 25,000 acres of land under lease in Texas and about 19,000 acres in Oklahoma.

The Lone Star company is capitalized at $6,000,000. It was originally engaged in the neutral gas business, supplying gas to Dallas, Fort Worth and Gainesville. It has forty gas wells and owns 350 miles of main pipe line and about 200 miles of branch pipe lines.

As a gas property, it earned in 1917 $1,913,000 gross and $772,000 net, compared with $1,519,000 gross and $518,000 net in 1916. Earnings in 1917 were equal to about $15 a share. The company paid $8 a share in dividends. Prospective favorable oil development is expected to increase earnings and dividend greatly during the current year.

Indiana Commission Against Public Operation of Utility Properties

The Indiana Public Service Commission, through Carl H. Mote, its secretary, has just gone on record very definitely against possible public operation of utility properties. In a letter answering a communication from Charles E. Elmquist, secretary of the special war committee of the National Association of Railway and Utilities Commissioners, Mr. Mote says the general public in Indiana has seen no reason why the Federal Government should take over the telephone and telegraph companies. Mr. Elmquist had written for information concerning what Indiana's commission has done "to help maintain the utilities during the war," and pointing out that efforts have been made to have the Federal Government fix rates for local street car and interurban companies.

"If power over rates and charges of these companies is assumed, then it is reasonable to suppose that the gas and electric lighting companies will make a similar request," Mr. Elmquist said.

Secretary Mote's reply follows in part:

"I shall at this time undertake to answer your questions in order

"1. During the year ending June 30, 1916, 122 applications involving rates affecting public utility service were filed before the Public Service Commission of Indiana. During the year ending June 30, 1917, 165 applications and petitions of this character were filed. During the year ending June 30, 1918, the number was 282.

"2. During the year ending June 30, 1916, of the 122 petitions filed involving rates, seventy-one increases were allowed or approved, eight reductions were granted or ordered, nine petitions were dismissed or denied and thirty-four were undisposed

of at the end of the year. During the year ending June 30, 1917, there were 165 petitions involving rates filed; ninety-nine increases in rates were allowed or approved; there were eleven reductions, twenty-four petitions dismissed or denied and fifty-five petitions filed during the year were undisposed of at the end of the year. During the year ending June 30, 1918, there were 282 petitions involving rates that were filed; 190 increases were allowed or approved; five reductions in rates ordered or granted; eighty-five petitions dismissed or denied, and sixty-nine undisposed of at the end of the year. (These sixty-nine cases were all filed during the year ending June 30, 1918.)

"3. Since June 1, 1918, forty-three petitions involving rates have been filed. Of the sixty-nine rate cases pending on June 1, 1918, and forty-three filed from June 1 to July 31, 1918, a total of 112, there were altogether seventy-one pending on July 31, 1918. I am enclosing you herewith a brief summary of the work of the commission for the year ending May 1, 1917. I am also enclosing under this cover an address before the Indiana Municipal League which summarizes the work of the commission during the past year.

"4. Our practice is and has been for a year at least to give prompt consideration to all petitions for rate increases presented to this commission. A good many increases have been authorized without a valuation of the property and an audit of the books, though in the big cases we have generally been able to get a valuation of the property and an audit of the books and still dispose of the case within a period of about two months. Section 122 of our Public Utility Commission Law authorizes the commission to suspend temporarily rate schedules which may in force where it appears that irreparable damage is likely to follow. I believe the Indiana commission was the first in the country to adopt the practice of authorizing a flat per cent surcharge to bills, and this has been the general practice where the commission has proceeded under Section 122 of the law.

"5. Local authorities, of course, have nothing whatever to do with rates at this time.

"6. I believe the Public Service Commission of Indiana is almost if not quite unanimously opposed to interference by the Federal Government in the matter of fixing rates for local utility service. This commission feels that it has met the problem squarely and promptly, and that Federal interference is unnecessary. There is only one possible exception to this. The Indianapolis Traction Terminal Company, operating the Indianapolis street railway, did not surrender its franchise, and is now operating under a franchise authorized by a special act of the Legislature in 1899. The company presented a petition to the commission last spring asking for authority to increase rates in the city of Indianapolis. The commission held that it had no jurisdiction for two reasons: (1) That the franchise of the company was not surrendered, and (2) having been granted by a special act of the Legislature, it was extremely doubtful whether the company could have surrendered its franchise. The Supreme Court of Indiana has just handed down a decision to the contrary, however, and the petition of the company is set for hearing on Aug. 19.

"7. I think the public in this State would be almost unanimously opposed to any interference by the Federal Government in the control of rates of local utilities. Here in Indiana at least nobody is quite able to understand why the telephone and telegraph systems were taken over by the Federal Government. No valid reason has been presented, so far as I know, and everybody has been wondering why this action has been taken."

Personal Notes

W. A. ALDRICK recently left Grand Rapids, Mich., for Mexico in the interests of the Monterey Railway, Light & Power Company for the purpose of installing an up-to-date appliance showroom, both for gas and electricity, making a specialty of industrial appliances. Catalogues of industrial appliances for both gas and electricity, such as candy cookers, bakers' ovens, electrically driven gas ironers and washers, gas and electric toasters, tailors' irons, electric percolators (aluminum), etc., will be gratefully received. The Monterey gas plant is the only one in operation in Mexico.

W. M. WILLETT recently assumed duties as general manager of the Western United Gas & Electric Company, of Aurora, Ill., succeeding Carroll Miller, who resigned that position several months since to accept a call to a similar position in a much larger company at Pittsburgh.

CHESTER A. DAVIS, who assumed the position of manager of the Municipal Light Department at Westfield, Mass., has accepted the general managership of the Cohoes (N. Y.) Gas & Water Company.

ROY M. FRANCE, aged fifty, superintendent of the gas fields of the Apollo (Pa.) Gas Company, died recently in the Presbyterian Hospital, Pittsburgh.

H. H. HERMES, manager of the new business department of the Oklahoma Gas & Electric Company, Oklahoma City, Okla., has been appointed Illuminating Engineering Administrator for the State of Oklahoma.

HALFORD ERICKSON, formerly chairman of the Wisconsin Corporation Commission and recently of the firm of Hagenah & Erickson, Chicago, has been elected vice-president of the Louisville Gas & Electric Company, Louisville, Ky.

DAVID O'CALLAGHAN, employed by the Troy (N. Y.) Gas Company for many years, died at his home recently at the age of eighty-five.

A. GERG, formerly employed by the Beaver Dam (Wis.) Gas Company, has taken a position as commercial agent for the Eastern Wisconsin Railway & Light Company. Mr. Gerg succeeds F. M. Evans.

P. S. DUNN, manager of the gas department of the Municipal Gas Company, Albany, N. Y., has been suggested by Fuel Administrator Gerritt Y. Lansing, of Albany County, as a member of the committee for improving the efficiency of boiler plants.

WILLIAM FLATLEY, for thirty-five years employed by the Plainfield Gas Company, died at his home in Plainfield, N. J., Aug. 12. He was fifty-six years old.

JOSEPH F. PUGHES, who has been for a year in the employ of the Denver (Col.) Gas & Electric Light

Company, has been made superintendent of the Knoxville Gas Company at Knoxville, Tenn.

F. H. RICEMAN, for several years connected with the Interstate Light & Power Company (Northern States Power Company), Galena, Ill., has been appointed general manager of the company, succeeding W. R. Miller, resigned.

R. L. HEATON, head of the department of geology of the Medina Gas & Fuel Company, Wooster, Ohio, has been transferred to the Bartlesville, Okla., office.

Construction Notes

Two Shell Manufacturing Plants to Be Erected in St. Louis Will Be Under Supervision of Laclede Company

Recent advices from Washington indicating that the Laclede Gas Light Company, of St. Louis, would control the construction and operation of two gigantic shell manufacturing plants at St. Louis were substantiated, and the plans of the company to double its capital stock, now $20,000,000, were revealed last week through the calling of a special meeting of the stockholders of the company for Sept. 10 to pass on the proposition.

In the words of the official call for the meeting, a resolution will be presented asking the stockholders to authorize increasing the capital stock of the company to $40,000,000, for the purpose, among other things, of "providing funds for the extension or enlargement of the plants, works or equipment of the company, or to purchase additional plants and property."

C. L. Holman, president of the company, has been at Washington for some time conferring with high officials of the Administration in regard to the munitions plant to be constructed and maintained under the direct supervision of the gas company. Although officials of the company would not discuss the matter in the absence of Mr. Holman, it was easily apparent that they were extremely proud of the fact that a representative of the gas industry was given control over so large a proposition, which really deals more largely with the manufacture of steel and other metals than with gas.

Mr. Holman is known to be an ardent advocate of the use of gas for industrial purposes, and it is felt that the shell manufacturing plant which he is to direct will make use of gas to a large extent, and perhaps in ways not heretofore undertaken.

It is generally understood, however, that the gas company was given charge of the plants as the result of its relations with the Government since our entrance into the war through the manufacture of toluol and other war essentials for the Government. The coke oven plants of the Laclede company not long ago were extended to enable the company to increase its output of toluol. Negotiations have been under way between the company and the Government for a further extension of the coke ovens, and it is believed the Government's decision to place the shell manufacturing plants in St. Louis and to have them under the supervision of the Laclede Company grew out of these negotiations.

Unofficial, but apparently authentic, information from Washington indicates that the shell plants will involve an expenditure in buildings and equipment of at least $8,000,000, will employ from 6,000 to 8,000 workers, and will have a capacity of 10,000 shells a day. The daily output, it is estimated, will be 4,000 240-millimeter shells, 3 ft. high and 9½ in. in diameter at the base, and 6,000 shells of 155 millimeters with a diameter of 6 in.

The plant for the manufacture of the smaller shells will be located on the gas company's property at Broadway, just south of the Des Peres River, in St. Louis. This will be the larger of the two plants, and will consist of a main building 200 ft. wide and 1,200 ft. long, one-story, except in the center, which will be the heat-treating department, and will have two or three stories.

The other plant will be erected adjoining the present plant of the Scullin Steel Works. The arrangements for both plants are understood to have been made in a series of conferences between President Holman, of the gas company, and Major Bruce, of the Ordnance Division of the War Department, last June.

The resolutions that will be submitted at the meeting of the stockholders follow:

1. A resolution authorizing and creating an increase of the common shares of the par value of $100 each, the present amount thereof, to 375,000 shares of the par value of $100 each; so that the total capital stock of the company will be increased from 200,000 shares (preferred and common) of $100 each, to 400,000 shares (preferred and common) of $100 each.

2. A resolution (a) to authorize an increase in the authorized bonded indebtedness of the company from $20,000,000, the amount now outstanding, to an amount not in excess of the capital stock of the company, as from time to time authorized; (b) to authorize the issue of bonds of the company to an amount not to exceed its authorized capital stock, to be used from time to time, at the discretion of the board of directors, for paying, refunding or retiring any outstanding bonds, debentures, notes or other obligations of the company, and providing funds for the extension or enlargement of the plants, works or equipment of the company, or to purchase additional plants and property; said bonds to be of such denomination, to bear such rate or rates of interest, to mature at such times and in such series or manner, and to contain such provisions for redemption, retirement or purchase, into common or preferred stock or other bonds of the company, and such other terms and conditions as the board of directors may determine upon; (c) to authorize the execution and delivery of a mortgage or deed of trust conveying all or any part of the property of the company to secure the payment of such bonds.

3. A resolution to authorize the board of directors to do such things as may be necessary, convenient or proper in their judgment to carry into effect the foregoing resolutions.

New Gas Holder Under Construction at Fort Wayne

For the purpose of increasing its oil storage facilities, the Northern Indiana Gas & Electric Company is engaged in erecting at its plant on East Superior Street, Fort Wayne, Ind., a gas holder of 60,000 cu. ft. capacity. This holder is to replace another holder of equal size which, upon completion of the new one, will be converted into an oil storage tank.

Larger oil storage facilities are needed this year, because of uncertain traffic conditions due to the war, and it is with a view of guaranteeing an abundant supply of gas throughout the winter season that the gas company is making the improvement. The gas holder is being built by the Kruse-Kemper Construction Company, of Camden, N. J., and will be completed by Sept. 1.

Brunswick to Own Gas Works

Brunswick will, no doubt, own her gas works after Oct. 1. The option of the city expires at that time, and council has already announced its intention of exercising the option.

Holland Gas Plant Is Ordered Sold

Although the suit between the city of Holland, Mich., and the Holland Gas Company still is pending in court, Referee in Bankruptcy B. M. Corwin has ordered the sale of the plant, including the plant of the Ottawa Gas Company in Zeeland. City Attorney Charles H. McBride has petitioned Federal Judge C. W. Sessions at Grand Rapids to review the order of sale of Referee Corwin, thereby preventing, if possible, the sale of the plant until a disposition of the case has been made in the United States Court.

Work Started on New Gas House at Bath

Work on the erection of the new gas house for Bath (Me.) was started Aug. 7 and will be pushed to completion. General Superintendent George Williams, of the Central Maine Power Company was in Bath Aug. 6 making plans for hurrying the work, and he believes it will be possible to complete the new plant about Oct. 1, instead of on Oct. 29, as called for in the contracts. He reports that all the machinery for the plant excepting the blower and compressor are on the cars and will be started at once for Bath, duly expedited by priority orders.

The old gas house, which it was originally planned to enlarge, proved to be in bad repair when work was started on it, and it has been torn down entirely and will be completely rebuilt.

Contract Awarded for Alterations to New York Plant

The New York Mutual Gas Light Company has awarded a contract to Richard Deeves for alterations to the purifying house at 723 to 727 East Twelfth Street, New York City. The cost has been placed at $20,000.

Several Permits for Construction Work Taken Out by Citizens Company

Blaine H. Miller, city building commissioner of Indianapolis, Ind., in a report just issued, says that with the taking out of permits for construction work at the Prospect Street plant of the Citizens Gas Company, the estimated cost of which is $411,000, building operations in Indianapolis in August will far exceed those of July, which was the banner month of this war year.

Permits were issued for forty coke ovens, the total estimated cost of which was given as $380,000. Permits also were taken out for the gas company's work as follows: Addition to power house, $6,000; quenching station, $5,000; blower house, $2,000, and condenser house, $18,000. The permits are for increasing the coke producing and gas producing facilities of the company, as have been outlined in previous articles in the JOURNAL.

The public service commission has approved the plans for the intended work, it is announced, and the gas company will proceed to increase its capacity as is desired by the Federal Government, to which the company now sends much munition material. The permits taken out by the company thus far represent only a part of the work to be done, the total estimated cost being approximately $1,500,000.

THE GENERAL GAS & ELECTRIC COMPANY and its subsidiary companies, in its statement of estimated gross revenue for the month of July, 1918 and 1917 comparison, reports increases as follows:

	1918	1917	Inc.—Dec. Amount	%
Rutland system	$42,513.27	$41,600.67	$912.60	2.2
Northwestern Ohio system	40,000.00	28,781.43	11,218.57	39.0
Sandusky system	32,262.28	30,674.18	1,588.10	5.2
Binghamton system	32,697.49	27,734.28	4,963.21	17.9
Sayre system	10,004.53	7,973.97	2,030.56	25.5
New Jersey system	24,387.30	18,771.81	5,615.49	29.8
Interurban Gas Company	1,171.71	996.46	175.25	17.6
Totals	$183,036.58	$156,532.80	$26,503.78	17.0

Rate Increase Authorized For Madera

The railroad commission recently authorized an increase in the rate charged for gas by the Madera (Col.) Gas Company. In its application for the higher rates the company states that its net return during the year 1917 was but 5.4 per cent, and that operating costs and the price of fuel oil have advanced.

Increase Asked By Binghamton Company

A meeting of the common council of Binghamton, N. Y., was held recently, at which a communication from the Binghamton Gas Works, announcing that it would apply to the public service commission for permission to increase its gas rate there 20 per cent, was read. This was followed by a notice from the public service commission that such application had been made, and that unless objections were raised the increase would become effective on Sept. 1.

The matter was referred to the committee on law and health. Unless a petition signed by at least seventy-five gas users is filed with the public service commission, protesting against the increase, the increase will be made automatically.

THE PITTSBURGH GAS & BY-PRODUCTS COMPANY; capital, $150,000. W. I. N. Lofland, Charles H. Jones, Frank Jackson, of Dover, Del.

THE COMMERCE OIL & GAS COMPANY OF KANSAS, Dover, Del., to acquire and operate petroleum, oil, gas, bitumen and coal deposits or mines, oil wells, gas wells and mining; oil and gas lands; capital, $50,000.

THE AMAZON GAS & OIL COMPANY, Wilmington, Del., prospect for mine, deal in petroleum, mineral oils, natural and artificial gas, etc.; capital, $100,000.